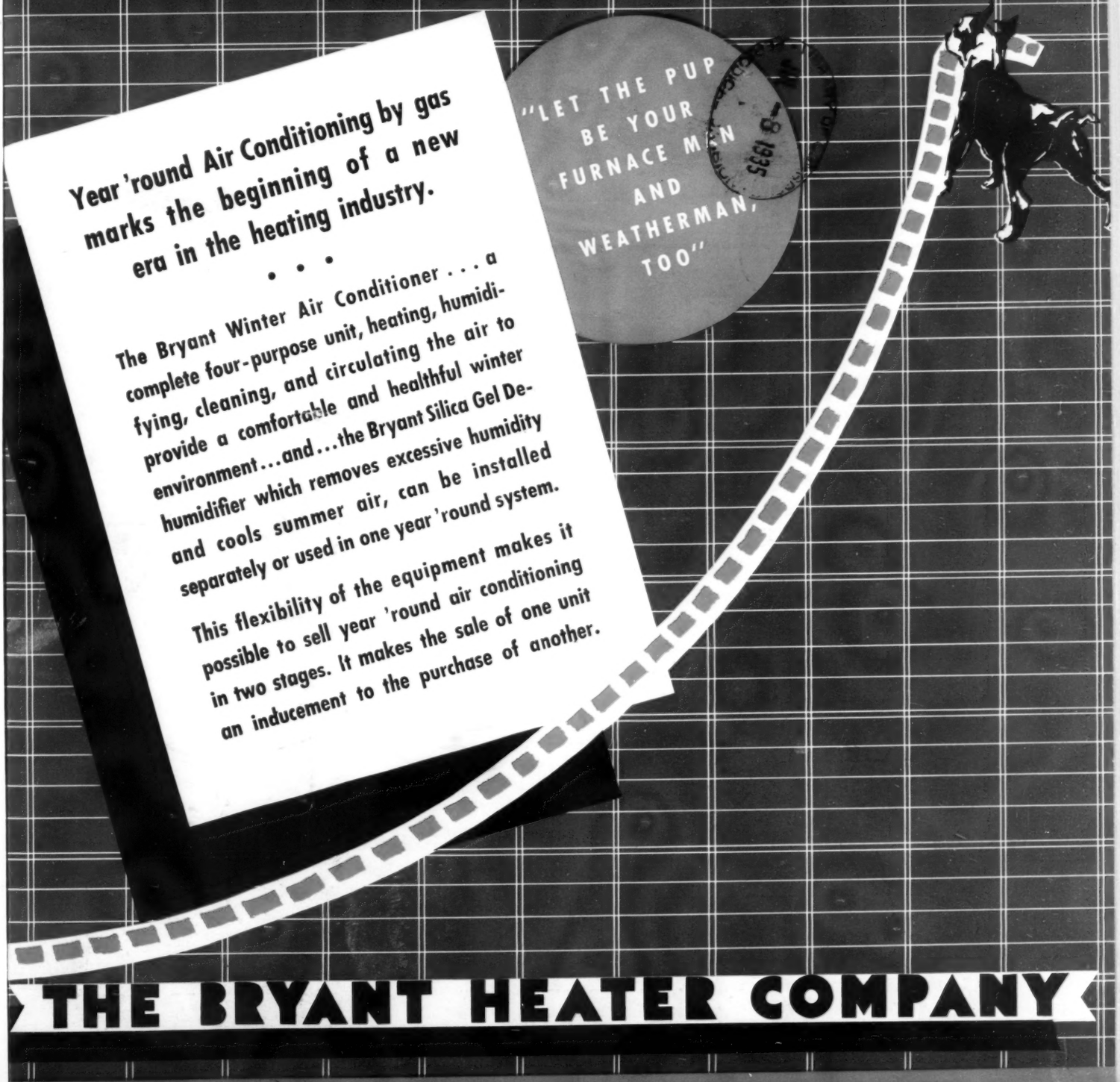
WESTERN GAS



Year 'round Air Conditioning by gas marks the beginning of a new era in the heating industry.

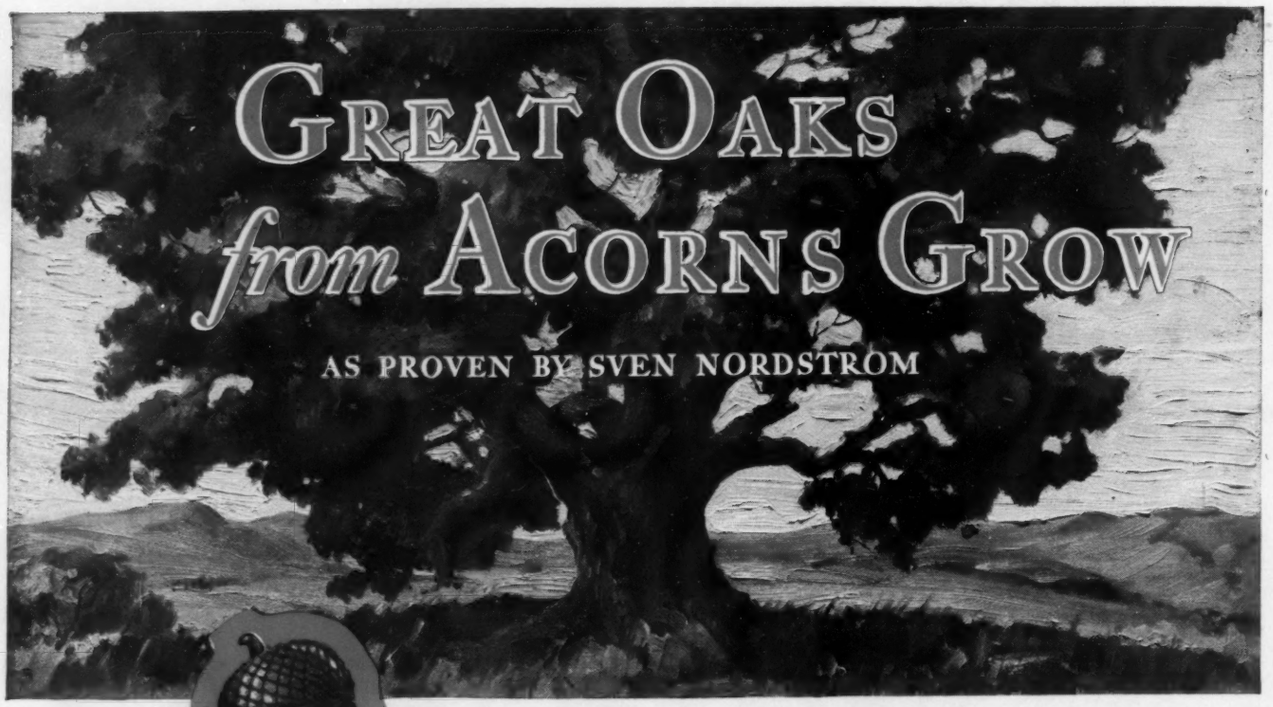
• • •

The Bryant Winter Air Conditioner . . . a complete four-purpose unit, heating, humidifying, cleaning, and circulating the air to provide a comfortable and healthful winter environment...and...the Bryant Silica Gel Dehumidifier which removes excessive humidity and cools summer air, can be installed separately or used in one year 'round system.

This flexibility of the equipment makes it possible to sell year 'round air conditioning in two stages. It makes the sale of one unit an inducement to the purchase of another.

THE BRYANT HEATER COMPANY

TP700
.P3



GREAT OAKS *from* ACORNS GROW

AS PROVEN BY SVEN NORDSTROM

DOWN in Mexico an idea germinated; a simple idea born of necessity. Sven J. Nordstrom, a mechanical engineer, was directing the erection of a filter plant at a mill in the Pueblo of Pachuca, Hidalgo, Mexico.

At the plant were several tanks for agitating ground ore in cyanide solution—a sort of slurry. Mr. Nordstrom sent a man up to the tanks to open one of the plug cocks to flow some of the slurry down to the filter. The man couldn't turn it. It was frozen tight. No amount of wrenching would free the plug. (Although plug cocks had been used since the days of Pompeii, their operation was limited because of the freezing of the plug to the body.)

"Why," mused Nordstrom, "couldn't a plug-cock be made workable by applying some kind of a lubricant and provide hydraulic means whereby a pressure would raise the plug sufficiently to loosen it?"

Nordstrom pondered over the problem. His success depended upon the use of workable valves. He finally hit upon the idea of a pressure *lubricated* plug cock—an idea so simple that it is inconceivable why it wasn't thought of generations before.

Nordstrom developed the basic design of what is now internationally known as the Nordstrom Lubricated Plug Valve, and thereby solved an obstinate problem. Within two years after the conception of his design he was selling tons of his valves to scores of mines for handling all kinds of corrosive and erosive solutions and abrasive materials.

HOW *a very simple idea, overlooked for decades, revolutionized valve operations in the Gas Industry.*

Photo of the original lubricated plug valve built by Mr. Nordstrom—the first to embody the hydraulic lift principle.

Returning to the United States, Nordstrom became affiliated with a group of engineers and the valve was developed for application to various industries—gas, petroleum and chemical fields principally—where there was a desperate need for valves that would hold the lines under high or low pressure and offer protection against corrosion and erosion. The patented "Sealdport" lubrication principle was a later refinement conceived by Mr. Nordstrom.

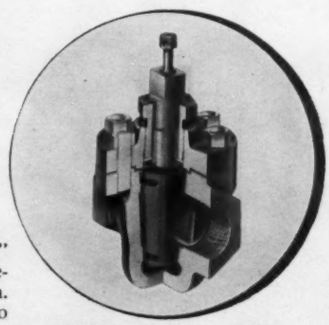
The amazing progress of the Merco Nordstrom Valve Company in the past sixteen years or more is well known. Millions of dollars have been invested in these valves. Practically every refinery in the country is Nordstrom-equipped. In the drilling for and producing of petroleum they have become indispensable.

Incidentally, an official of one of the largest, most modern chemical plants in America recently made the following statement: "It would have been impossible to design and build our new plant if Nordstrom Valves were not available. We could not operate our plant efficiently without them."

SVEN J. NORDSTROM
inventor of the lubricated plug valve

So, from a simple idea which occurred to an engineer, a revolutionary change has been wrought. "From an acorn a giant oak has grown." Through all the years since the conception of the valve, Mr. Nordstrom has actively devoted his attention to the development of the product and added many refinements. It is the determination of the Merco Nordstrom Valve Company to continue the progress which has identified the organization since its inception.

The main offices of the company are located at Pittsburgh, Penna., with service offices at New York, Philadelphia, Buffalo, Chicago, Kansas City, Columbia, Memphis, Tulsa, Houston, Los Angeles and Oakland.



The latest Nordstrom Valve

NORDSTROM *Lubricated Plug* *with patented "Sealdport" Lubrication* **VALVES**

10

Pat 12
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Hook-ups FROM WELL TO SEPARATOR

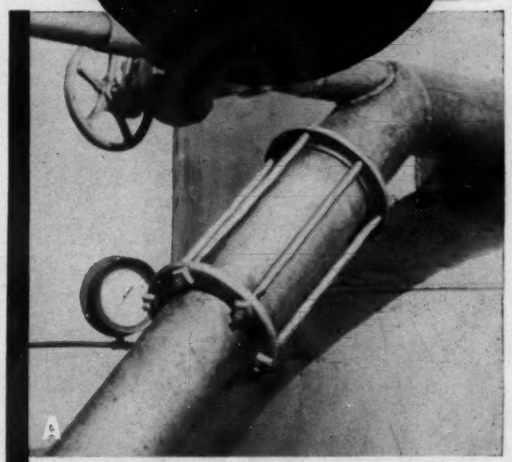
. . Modern Practice CALLS FOR DRESSERS

The same, proved advantages that have made Dresser Couplings standard for gas lines—*permanent tightness, flexibility, simplicity, strength, economy*—are precisely the reasons why Dresser Connections are now so popular for a "thousand-and-one" oil field hook-ups. Are you using Dresser joints for the services recommended below?

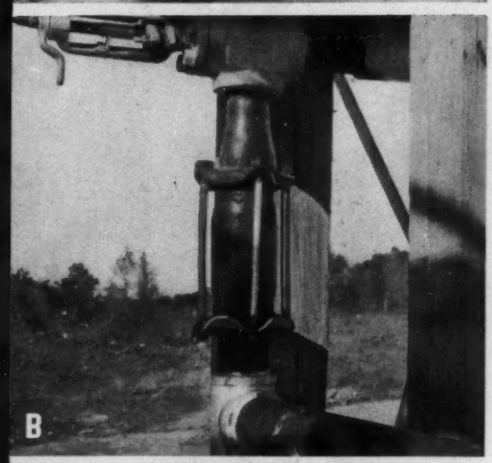
1—Christmas-tree hook-ups at the wells.
2—Flow lines running from Christmas trees to separators, and from separators to field storage batteries.
3—Exhaust lines from Diesel drilling engines.
4—Flow lines on top of tank batteries.
5—Bleeder lines from tank batteries.
6—Flow lines from gathering stations to tank storage.
7—Main lines from gathering stations to loading terminals.
8—Flowing plant (i.e. gas lift plant) lines.
9—Natural gasoline plant lines, also manifolds.
10—Refinery lines, subject to expansion and contraction.
11—Natural gas gathering lines of all sizes.
12—Natural gas booster and main line stations.

51

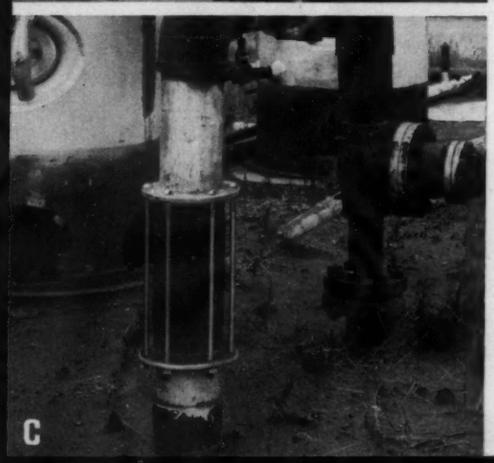
Your Nearest Supply Store Has Dresser Connections!



A—Dresser Sleeve makes flexible, absolutely tight connection on oil flow line terminating at separator and extending from lower valve on producing well.



B—Dresser Sleeve installed on Christmas-tree end of flow line that runs to separator. Sleeve can be demounted quickly with ratchet wrench.



C—Showing how a Dresser Sleeve is used to make a quick, convenient, flexible connection on high-pressure gas trap at the separator.

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M.S. 25/IX/36

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WESTERN GAS

"Reg. U. S. Pat. Off."

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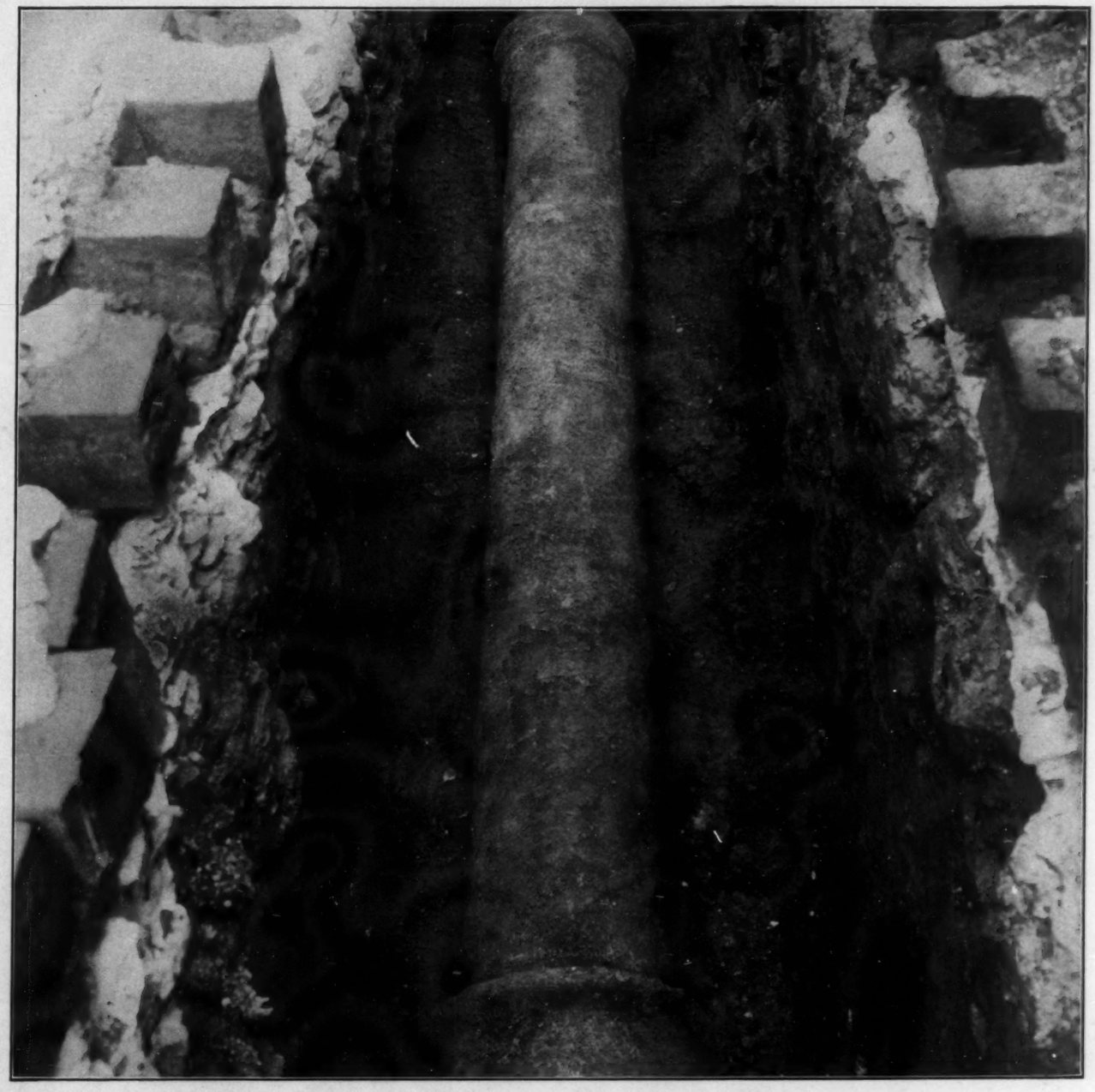
OFFICIAL PUBLICATION: Pacific Coast Gas Association; Southern California Meter Association

A century old—made of cast iron the standard material for gas distribution mains



• Visible evidence of the long life of cast iron gas mains is this photograph of an exposed 10" pipe, part of Philadelphia's first gas distribution system, installed in 1835 and still in service. Cast iron pipe as made today with gas-tight mechanical joints and with improved standards of metallurgical control is an even finer product for gas service than the long-lived pipe of a century ago. The Cast Iron Pipe Research Association, Thos. F. Wolfe, Research Engineer, 1015 Peoples Gas Building, Chicago.

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A complete, comprehensive campaign—ready to start work right now and bring you immediate results. Keyed to the active desires of every one of your prospects, this campaign drives home time after time the potent points that build more gas range volume.

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★NEWSPAPER ADS . . . laid out in a modern manner to drive home your sales inducements. Your choice of 10 ads in various sizes.

★BROADSIDES . . . beautiful three-color pieces to back up your newspaper campaign . . . pave the way for more sales interviews and action-making demonstrations.

★DISPLAYS . . . a new 4-time-a-year display service—making your sales floor and windows pull 100 per cent. Full of life, color and sales punch.

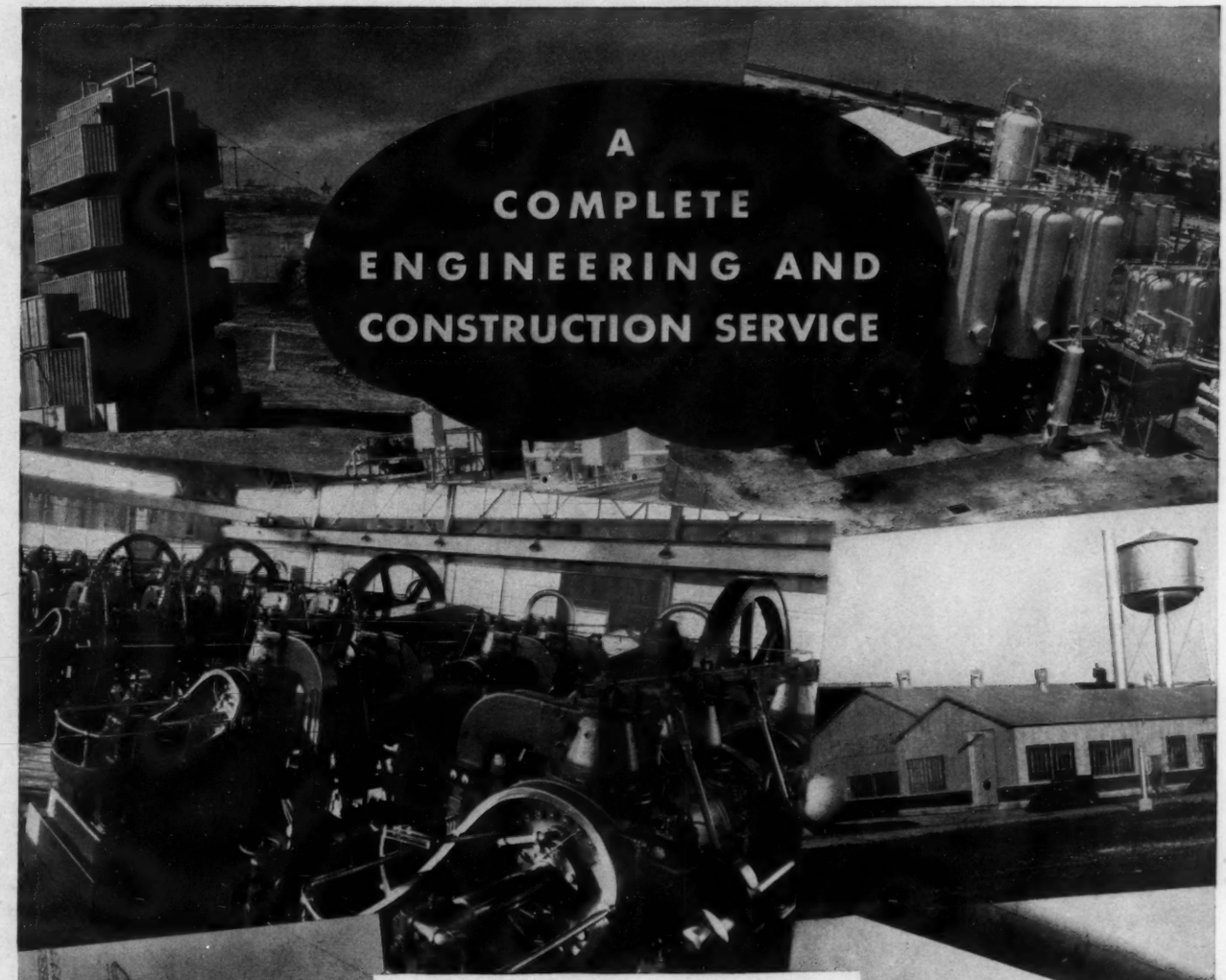
QUALITY NOT PRICE

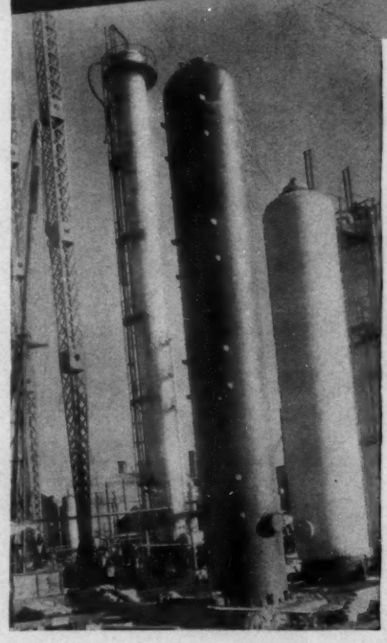
The reception of our 1935 line was marvelous. It was particularly gratifying to see the trend toward DeLuxe models. Evidently consumers are buying *quality* merchandise, not *price.*

If you haven't given the new Roper Gas Ranges a chance to prove their sales appeal, order samples now.

The Roper DeLuxe Series—with one or two big baking ovens—one or two "waist-high" broilers—four, six or eight top burners (in various arrangements)—three color combinations.

GEO. D. ROPER CORP., ROCKFORD, ILLINOIS





That, very briefly and concisely sums up what the Fluor Corporation offers to the oil and gas industries. Fluor designs, constructs and installs, either in their entirety or in part,—either assuming full responsibility or working with the owners and under the supervision of their engineers—the following oil and gas projects:

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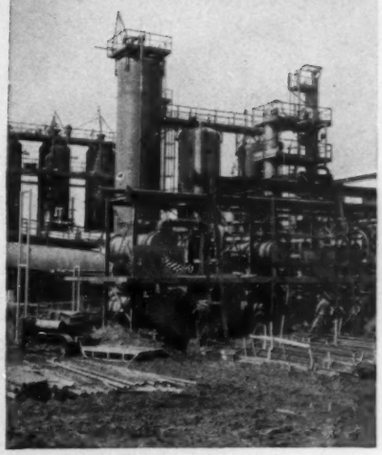

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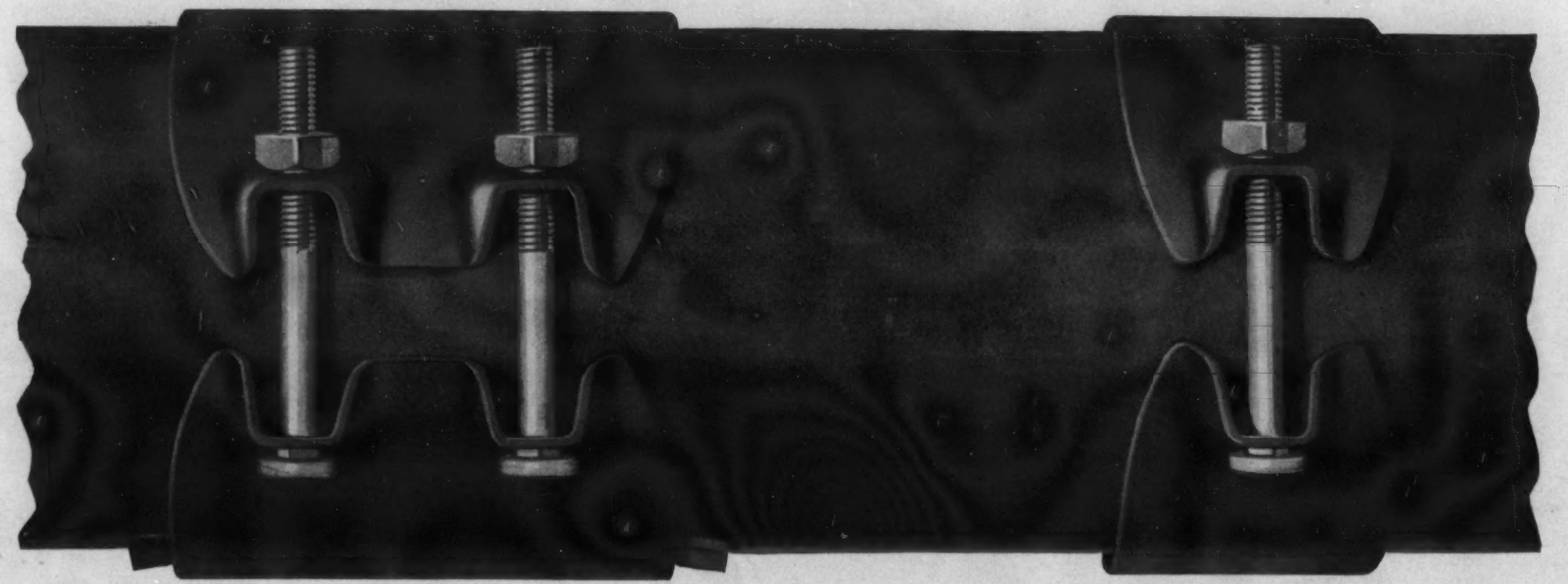

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★ **SKINNER PRESSED STEEL ECONOMY CLAMP is made of hot pressed steel plate, 3/16″ thick, with sturdy wedge-shaped lugs pressed out of the material itself. Comes complete with ⅝″ cadmium plated steel bolts, and gasket. Tremendously strong!**

Two widths — 3½″ with single bolt and rubber cone gasket *for pit holes in pipe lines* — 6½″ with two bolts and pressure-equalizing strip gasket *for running corrosion spots.*

Stops leak instantly and permanently — later, if desired, the half which covers leak can be welded on as a patch, and other half used again. Pipe sizes 6″ to 24″. Write for discounts and complete Catalog No. 35.

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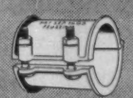
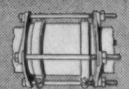


EMERGENCY PIPE CLAMP

PIPE LINE CLAMP

PIPE JOINT CLAMP



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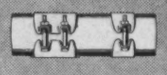

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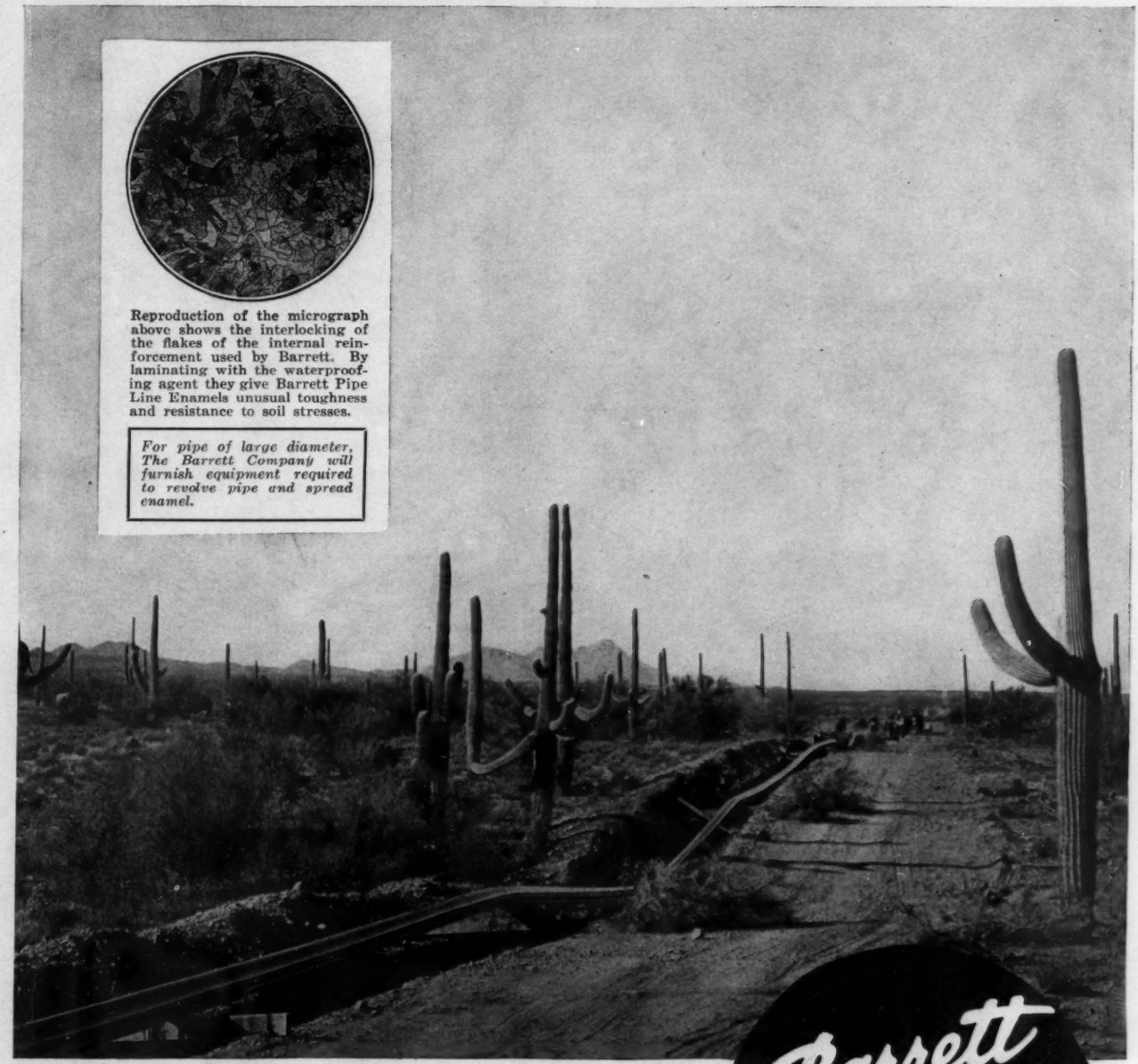
Backed by 81 years of waterproofing experience

Reproduction of the micrograph above shows the interlocking of the flakes of the internal reinforcement used by Barrett. By laminating with the waterproofing agent they give Barrett Pipe Line Enamels unusual toughness and resistance to soil stresses.

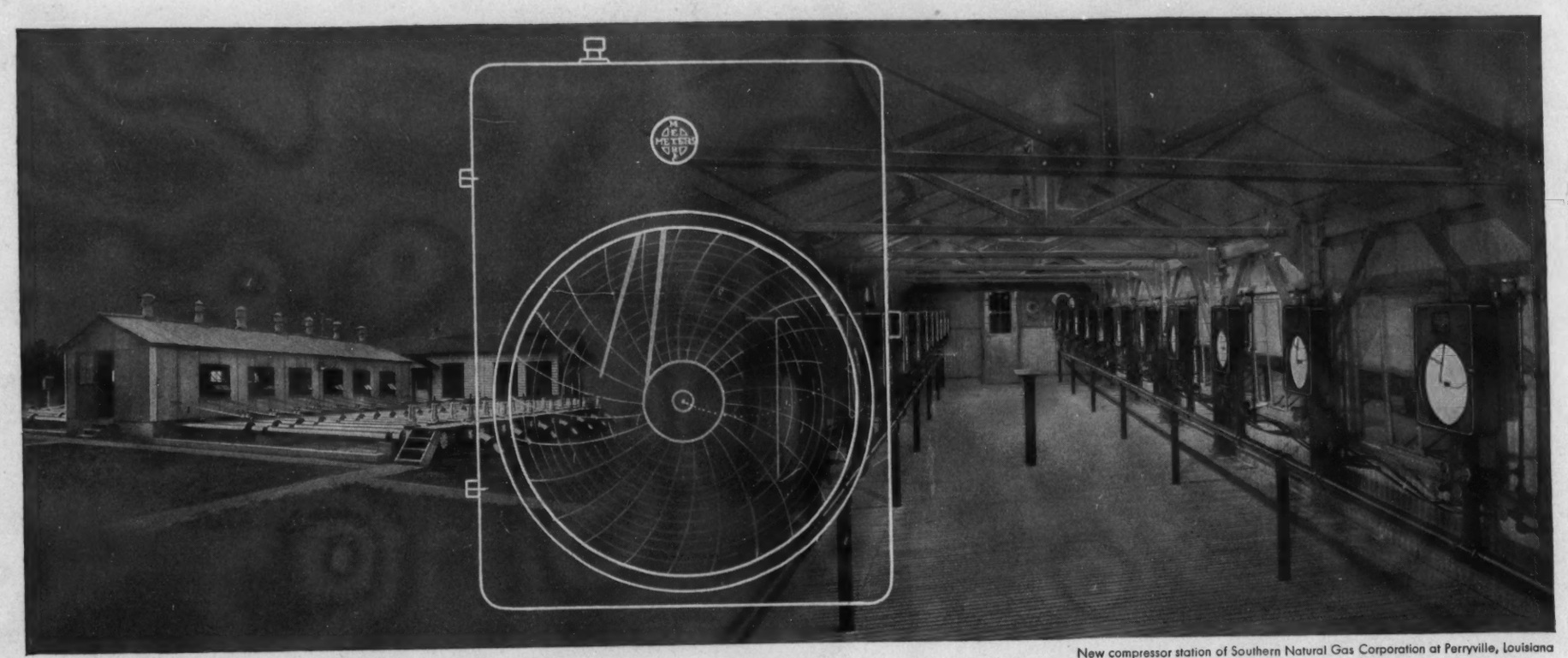
For pipe of large diameter, The Barrett Company will furnish equipment required to revolve pipe and spread enamel.



To the problem of protecting pipe lines against corrosion, The Barrett Company brings a background of years of successful experience in waterproofing tunnels, dams, subways and other underground structures. This broad experience has enabled Barrett to produce most effective and efficient pipe line coatings —tough, adhesive coating resistant to moisture, soil acids and stray electrical currents. An experienced field staff will gladly help you on any pipe line protection problem. Phone, wire or write.

Barrett PIPE LINE ENAMELS

THE BARRETT COMPANY, 40 Rector Street, New York, N.Y.



New compressor station of Southern Natural Gas Corporation at Perryville, Louisiana

again SIMPLICITY *was the decision*

● Again it is proved that the fewer working parts and simplicity of Westcott orifice meters are a real guarantee of accuracy and low maintenance cost. ● In selecting meters for their new station Southern Natural Gas Corporation chose Westcott meters on the basis also of past experience with a large number of these instruments. ● This station employs 28 Westcott meters on 14 runs. The capacity of the installation is approximately 325 million cu. ft. per day at existing field pressures. ● Setting the master and check meters facing each other to make comparison convenient and gage lines uniform are especially noteworthy features in the design of the station. ● The same degree of accuracy—and low operating cost—are equally as important in all installations where gas, oil, steam or liquids are measured. The new Catalog EG2 giving complete data is just off press! . . . and will be mailed on request.

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INCORPORATED
The World's Largest Manufacturers of Gas Meters and Allied Apparatus
ESTABLISHED 1836

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305

July, 1935

WESTERN GAS

"Reg.U. S. Pat. Off."

Vol. XI, No. 7

LOS ANGELES—810 South Spring Street . . . . . 1064 Peoples Gas Building—CHICAGO

A Viewpoint from the Midpoint

By G. C. HARAWAY

Staff Assistant to City Supervisor
of Public Utilities, Dallas, Texas

THE STATEMENT below—offered from a "midpoint" between customer and company—has some things to say which to *Western Gas'* way of thinking are rather basic, on this question of why utility companies are not in the best of favor with their public. Some opinions are expressed with which other readers may take issue; certainly the subject is uppermost in the minds of all utility management at this time, and anyone desiring to extend Mr. Haraway's remarks or present other views is welcome to command space for the purpose in a future issue.—*Editor.*

IN our line of endeavor it is required that we maintain an intimate contact both with the utilities and their customers. The occupation of this middle position means that we should be sensitive to the more subtle reactions that emanate from either camp, and should be able to give a worth while slant on the question, "Where lies the seat of the under cover friction that exists between the companies and the general public, and what is the answer as to a remedy?"

In short, the cause is the lack of complete understanding. The answer is—simplicity, as a basis of all mutual contacts.

A typical query to our department from a typical utility customer runs something like this: "It requires less than 1 cent to generate a kilowatt-hour of electric energy and we pay 5 cents for it. Why?" Also: "The pipe line company pays about 7 cents a thousand cubic feet for gas and we pay 70 cents. Why?" The typical customer's imagination is unable to bridge the cost gap between the inception and the utilization of the service.

The companies are, in a measure, to be blamed—not because these prices are not justified, but because no effort is made to point out in terms that the rank and file can understand, what a variety of charges combine to make up the expense of keeping a going concern going. These charges are threshed out when the utilities appear before the courts or regulatory commissions but the utility representatives too frequently present the facts with a seeming reluctance and couch them in such technical terms that the layman quite loses himself in a maze especially designed for the legal minded. We, whose business it is to keep up with such things and whose training has been along such lines, find it a task that requires utmost mental concentration to weave our way over circuitous routes in order to get at the real objective of such a collection of facts. Now in the natural sequence of mental procedure there follows the impression that something unholy certainly lurks where an effort at understanding is apparently deliberately side-tracked. The companies contend, and correctly, that bald facts concerning operations would give rise to hasty, damaging conclusions on the part of the average customer. Furthermore, selfish critics would capitalize by deliberately misrepresenting or overemphasizing facts which in themselves are correct but give erroneous impressions unless properly fitted into the complete operating picture. A simple analogy is a quilt pattern. Any part of it alone does not necessarily please the eye, but when each part forms a complement to the others, the composite is usually satisfactory. Therefore the complete story should be freely and frankly given.

In order that this can be done with safety it is first necessary that the companies bring about a basis of complete understanding with their customers. A big aid toward this end, as we see it, would be the insertion of the human touch into the now mysterious routine of operations. Naturally such a policy calls for a complete change from the present front line attitude of the utility. In the place of the rather lofty air of complacence and perfection now typical, there should be a frank display of the hazards, heartaches, triumphs, reverses, emergencies, costs, and responsibilities that management and personnel now share behind the scenes. In other words, the machinery of organization should be broken down into its human elements before the very eyes of the layman so that in it he can see a magnified parallel to his own existence and therefore understand. Simplicity should be the keynote of these explanations. For an instance take a cost item. A precision apparatus forming a part of the utility plant, to a casual observer, may look relatively simple. An offhand price quotation of this apparatus would quite stagger him, as he is unfamiliar with the details of its manufacture. However, after a simple explanation of the

painstaking care, skill, labor, and materials that go into its make-up and installation, with perhaps an added dash of romance and a touch of pathos for seasoning, the reaction would probably change to one of "No wonder," or "Who would have thought it." Such explanations along this particular line would certainly serve as an aid to the understanding of seemingly high accepted property values on which rate structures are predicated.

One of the most important factors influencing the public relations of a utility company is the attitude of its employees, especially those making direct contacts with the public. Let them be ever mindful that the only way to gain the layman's confidence is to adjust their own point of view instead of trying to "sell" themselves or their company by pressure. The wise thing is to avoid the usual superior, suave, machine-like air of perfection. It is at once overpowering and damaging in its effect, although neither party may be conscious of it at the time. Nevertheless the attitude serves a wedge to create a gap in the front line. Of course the man who is expert in his line is a definite asset, but indeed fortunate is the company whose men can combine knowledge with the happy faculty of being able to slide themselves quickly and naturally into the customer's viewpoint.

Surely it is in line with the burden of this discussion to touch here on a new idea that has recently seized the popular fancy of utility management. It is that of militant aggressiveness directed particularly at the federal government. Vigorous attacks are now made openly every day. On paper and in convention halls the attitude is impressive, even thrilling, but the very nature of the utility business dictates that the rather unspectacular adage "discretion is the better part of valor" is still a potent mentor of cool-headed management. It must be remembered that the present government, with a definite, publicly avowed policy toward utilities, was placed in power by an electorate that also furnishes the life blood of the industry. With this people as a whole, then, and not just the investors does it behoove the management to come to an understanding. If such an understanding is achieved and maintained, the companies need have no fear for their ability to ward off unjustified attacks without being forced into the unenviable attitude in the eyes of their own customers of big business dictating to the government.

Criticism implied in this discussion is intended as entirely constructive and born of a sincere desire to see utilities' customer relations standards elevated to the high level of those which now govern operations.

G. C. Haraway

New Tone to Washington News

AS this issue of *Western Gas* goes to press newspapers are full of the decisive defeat handed administration proposals for forcing dissolution of utility holding companies, by the House of Representatives. What will happen to the measure as it goes into conference between House and Senate is the action of present interest. With the President on record as wanting a bill containing the destructive clause, or none at all, there is the possibility that the measure may never emerge from the conference committee. But that would not settle the issue. There is a very general feeling both within the utility industry and without that some regulatory legislation which will stop far short of destruction is needed. If it does not come in satisfactory form in this session the issue will be prominent on 1936 campaign platforms.

Beginning their efforts late, utilities, nevertheless, have done a great deal to bring their case before the public, and whatever action comes out of Washington in the next few weeks, this informational program must be continued unremittingly.

Study in Contrasts

COST of gas and electricity continues the downward trend shown for many years past, while living costs bob up and down with every changing stage in the economic cycle. This is a familiar phenomenon to utilities, but it gets little recognition from the man in the street. Here are the figures contrasting living costs and gas and electric cost trends from March, 1933 to March, 1935:

Items in the cost of living for this period, according to data from the National Industrial Conference Board, U. S. Bureau of Labor Statistics, and Fairchild Retail Price Index, increased in this ratio—food, 35 per cent; housing, 4 per cent; fuel (coal), 5 per cent; clothing, 25 per cent; furniture, 35 per cent.

Edison Electric Institute figures show that in the same time the cost of residential electricity decreased 6 per cent.

From the American Gas Association statistical department the average price of natural gas for domestic use in March, 1933 is given as 63.5 cents per M c.f. with a corresponding figure of 62.5 cents for March of this year. This is a 1.6 per cent decrease from the already low costs of natural gas. Manufactured gas for domestic use in March, 1933 averaged 114.9 cents per M c.f., and in March of 1935 had dropped to 109.4 cents—a decrease of 4.8 per cent.

The appalling record of increasing governmental costs of all sorts affords an even more startling study in contrasts, when set up against the gas and electric utilities' showing during the past two years.

NEXT MONTH WITH "WESTERN GAS"

New Markets for Gas and Appliances in the Public Works Program

Where will the allotments of Public Works funds go, and what will they mean to the gas industry? This authoritative article suggests avenues which alert sales departments should watch, for possible new load with Uncle Sam as buyer.

Copper Pipe in the Modern Gas Distribution System

Under what conditions can copper be used profitably? What installation methods have proven most practicable? This discussion will give the answers.

Making the Most of the Sales Floor

A collection of practical suggestions from the experience of a leading utility, on sales floor technique in use of display materials, personnel and management policies.

Central Heating Essentials

Another article in the *Western Gas* series devoted to fundamentals of specification, installation and servicing for each of the "key" domestic appliances.

4 Sides to Good Water Heating

1. Selling
2. Sizing
3. Installation
4. Servicing

By FRANK C. PACKER District Manager Welsbach Company

THE future success of any legitimate business depends very largely upon the quality of its present service. This axiomatic statement is assuredly true of the gas business, and, therefore, of each branch of the domestic gas appliance business. Whether gas shall remain the dominant fuel for use for cooking, house heating, automatic water heating and other domestic and commercial uses depend upon how well it serves now and every day from now on.

Frank C. Packer

Promptly we hear someone say, "We know that, and maintain adequate service departments, inspectors, installation crews, even sales crews, so that we shall not fail to give service." Let us study this thing more carefully. Starting with sales avenues, partly operated by utilities but in an increasing proportion dealer conducted, are the utilities assuring service from the start? This writer has been asked to analyze all the angles above as applied to automatic water heating, and we shall attempt to evaluate the several factors entering into "quality service."

Perfection of service being the necessary aim, for selfish reasons, of the gas industry, let us consider what are the several factors which enter into rendering that service. Four major factors, the improper performance of any one of which will handicap, are selling, sizing, installation and servicing. Manufacturers may produce the finest equipment, may build the most perfect of controls, may use everlasting materials, gas companies may serve the purest of gas at the most even pressures and at rates low enough to prevent "municipal ownership advocates" from even whispering, but if the water heating equipment sold to the consumer is inadequately explained to the user, if false ideas are left in his or her mind as to what it will do and what its operation will cost, disappointment follows and the reputation of gas suffers. If the appliance prove shorter in life and in need of frequent and costly repairs, gas bears the blame. If the sales agency does not make sure that the heater sold the party is of adequate capacity to supply the needs of the building into which it is going, again gas bears the grief. If the installation is not made in the proper place and manner full usefulness is not enjoyed and perfect service not attained. And even if all three of these have been correctly done, continued satisfaction depends upon intelligent and timely servicing through the years of its use, or other fuels will find an added prospect where only gas should ever be considered.

Selling and Sizing

The first two of these major factors go hand in hand. Proper selling and proper sizing must be done at the same time, of course, and it is here, at the very outset, that much education must yet be done. We visit model homes and find hundreds of dollars spent upon beautifying the bath room and kitchen sink, glass enclosed shower stalls, and $25 worth of automatic water heating equipment to represent what gas can do to make all those beauties useful. We still find three-bathroom homes being equipped with heaters hardly large enough to serve one bathroom. All too frequently we find utilities placing their sales forces more or less at the service of, or stepping aside for, any other outlet selling gas appliances, often permitting inadequate and low grade water heating equipment to go on the lines, instead of putting selling emphasis on quality and adequate capacity. Nearly every manufacturer, if not all of them, produces a quality line and all of them manufacture heaters of capacity to meet any ordinary need. It is plain that all parties to the transaction benefit if better and more capable heaters are sold, regardless of by whom made or through whom sold, manufacturer and dealer gaining from a more satisfactory gross profit and the customer and utility gaining through improved service and longer life of usefulness rendered by the higher grade appliance.

Most assuredly it has long been time some guidance should be given the new home builder to see that he had the proper size and type of heater and that he bought by some other standard than price. Only such a course will prevent that customer being again in the market for water heating devices in two or three years, and prevent him from getting the idea that gas water heaters naturally are short lived.

Selling the proper type and size of equipment calls for more than man power, more than mere merchandise transaction. It calls for promotional advertising of water heating service, its need, its manifold uses and economies, through all the various agencies—newspaper, billboard, radio, direct mail and personal salesman's calls. Throughout all this coordinated selling appeal, if gas is to maintain its rightful place as the source of energy rendering this service, some stress must be given to quality and adequacy of equipment to assure permanent service. Surely the utilities cannot look for this to be done by dealers who are in constant competition with others, each by the very nature of things guarding against a lower price by the other. Standards of service must be kept high by utility leadership, whether they sell or whether it is all done through dealer outlets.

In a 1934 Pacific Coast Gas Association Sales Conference R. W. Miller pointed out the selling job ahead, and emphasized its greater proportion of future over past utility importance. The old adage about a job worth doing at all being a job worth doing well certainly applies to the selling of gas appliances, and from reports coming from service departments of various utilities it is assuredly high time to begin doing the job of selling hot water service well. Each type of heater may have, and frequently does have, different potential service-ability, but whatever it is for each style and type it is highly important that proper selectivity be used in

placing heaters in both domestic and commercial installations. Unfortunately we do not have readily available recording water meters to give us hour to hour demands but certain fundamentals available will serve to prevent such poorly sized jobs as we refer to in an earlier paragraph—15-gallon or smaller heaters trying to do work which would tax the ability of many 30-gallon types. In new construction it is certainly worth while to assure that gas is represented by water heater service sufficient to care for the needs of the building and its occupants, whether this calls for a campaign of planning with and through the architects and builders, or whatever program may be needed. Let's give this phase of our business the study its load value justifies to the end that we may really serve our customers in a manner of which gas may be proud.

Installation

The third of our major factors is, perhaps, one we should hesitate to discuss, but its importance is so great we must give it real study. To render proper hot water service the appliance must be installed not only according to local ordinances, be connected with leak-proof fittings and connected to a vent; it also should be located so that the major points of use are as close as possible to the heater, unless it is a circulating system. The venting should be of a type which will actually vent and not act as a baffle to the carrying off of products of combustion. We may well learn from our younger competitors, in many cases, and place more than one heater where long runs may be cause for poor service. We may fairly assume that actual installations being made now are being well made and correctly adjusted, as to pilots and temperatures, but a very general disregard prevails as to correctness of maximum b.t.u. input. In passing the American Gas Association Laboratory tests to gain the Blue Star Seal fixed maximums are set up, and it is important that those not be exceeded, leaving leeway for such added input as may be caused by increased pressures and increased B.t.u. per cu. ft. as may take place during normal operation of the heaters. To the writer's knowledge very few companies in the country check this, but one large company (Niagara Hudson and its associates) has found it worth while to have a gas company man check and set inputs so that they conform to or are below maximums permitted under the Blue Star. This may seem of little import, but efficiencies and life of appliances may easily suffer, thus rendering poorer overall service, shortening the period free from competitive trouble.

Servicing

In approaching the fourth of our major factors under consideration in this study, it seems to the writer quite timely to interject a plea for a fair understanding of what service men can accomplish, as contrasted with what all too frequently is expected of them, and with the handicaps which confront them in making it possible for the customer to have that perfect service which is the service man's ambition. Earlier in this article we called attention to proper selling and proper sizing as well as proper installation, emphasizing the penalty which gas must pay if any one of these three is incorrectly done. Upon the service man's shoulders fall the task of correcting not only conditions created by wear, tampering, accumulated dirt and all the common "out-of-order" complaints which come in, but of making the customer satisfied with appliances which are fundamentally wrong to begin with, either due to inadequacy of capacity, inferior construction, faulty installation or what have you. And he generally must try to do all this without "passing the buck" to anyone, no matter how much at fault the seller or the installer may have been (or the manufacturer), and all that in a very limited amount of time. Salesmen may have to be good diplomats, but let us give thanks for the service man who must out-diplomat the salesman, every day.

But to our discussion. By the very nature of gas appliances it is obvious that at more or less frequent intervals servicing by properly trained men is necessary if those appliances are to perform to the credit of the fuel they use. It is most encouraging to note that some of the leaders of the industry have come to a better realization, these past few months, of the importance of this phase of the business. The service handbook on automatic water heaters gotten out by the American Gas Association is a step which will be very helpful. The work of such companies as the Southern Califarnia Gas Co. whose methods of training service men have been explained by Lee Holtz in *Western Gas,** and of the Pacific Gas and Electric Co. which is preparing a manual along the lines of the A. G. A. book above mentioned, so that every service man may be equipped with detailed descriptions of the various types of automatic water heaters which may be encountered, will do much to help the service man do his job to the satisfaction of consumer, company and himself.

Many companies, however, still expect to protect and insure the continued use of gas with service men whose only knowledge of most of the water heaters they encounter is that gained from actual encounter with the heater on the firing line. It is too important a part of our future to longer expect our service men to analyze the trouble with any appliance entirely by guess work. We equip service men with trucks, tools, record cards, even with uniforms, probably averaging close to $1000 invested in outfitting him for work. It is only logical that he be given opportunity to school himself thoroughly in the many types of devices he will encounter, and it is surely going to increase the earning power of the mechanical equipment furnished him if he be supplied with such service manuals as those above mentioned.

It has been the writer's good fortune to address in groups and to talk intimately with many service men individually, and from service man and superintendent alike I find just as deep pride in a service job well done as exists in any other group of men engaged in the industry, and it is a source of much disappointment to them if they have to leave a job uncertain if they have corrected it. Therefore this plea that the executives of the gas industry help them by supplying them with all available data as to what devices they may encounter, and that the future of the business be further protected by allowing sufficient time per service call so that a thorough job may be done.

Load Worth the Effort

Certain it is that an appliance with a potential market for so high a percentage of domestic and commercial gas load as that belonging to the automatic water heater field justifies and the selfish interests of the industry make imperative the fullest use of all four of the major factors above discussed. We know that gas is the ideal fuel for this use, we know its unusually even hourly demand; we know the field has hardly been scratched among most of the gas companies in America; we know the enormous added load its full promotion offers without the expenditure of an added dollar in plant, main, service or meter; and we must recognize that the purveyors of other fuels are as keenly aware of the value of the business this field affords. The natural law of the "survival of the fittest" makes imperative that we so sell, size, install and service our water heating appliances that they remain the "fittest" and that gas thereby be the sure survivor among the agencies providing quality self-action hot water service.

* In this issue Mr. Holtz presents his company's course on water heater servicing.

GROUP ORGANIZATION FOR EMPLOYEE SALES

New Angles to New Orleans Plan

By GEORGE H. FINLEY
Editor, Western Gas

THAT employees outside the sales department may be a valuable asset in the load-building program is no new idea to New Orleans Public Service Inc. Experience with general employee selling has taken several forms in New Orleans, and the group plan which has finally evolved is of general interest to sales departments. Like any promotional program, it was designed for New Orleans conditions, but in its general aspects the plan is susceptible of adaptation to other situations.

BACKGROUND OF PLAN

New Orleans Public Service operates gas, electric and street railway services and has approximately 2,000 white employees, to which the group sales plan thus far has been limited. At the present time the 300 to 400 colored employees are being added to the program.

The company's gas and electric sales functions are combined, the sales department being divided into three branches —dealer sales, residential sales, and commercial and industrial sales. In residential direct sales work 35 outside gas and electric salesmen are employed, the city being divided into 35 districts of about 2,000 meters each with salesmen working on the closed territory system.

General employee selling in the company, before the present plan was introduced, was conducted on a department basis. Each department head "put on the pressure" to lead the other departments in sales results. This scheme, while reasonably effective in load-building, had some by-products which were not so acceptable. The natural desire of each department to lead brought on too much pressure. Some inter-department friction developed. Employees in extreme cases were apt to get the impression that their jobs were at stake if a good showing was not made in the sales program—which was not the right thing for morale.

THE GROUP ORGANIZATION

With the above background a description of the present group organization for selling by general employees at New Orleans will be better understood. This program dates from August of last year, at which time an employee sales department was created, independent of other company departments, and a full-time employee sales supervisor was delegated to the work.

Employees of the company's 15 departments were divided into approximately 50 groups, averaging from 12 to 35 each. In each of the larger departments, there were several groups, and this permitted intense group rivalry within the department. However, the new plan eliminated inter-department rivalry. The department heads are kept informed on the results of their own employee sales efforts, permitting them to assist the sales department in conducting their sales activities.

At the head of each sales group is an employee selected by his department head for special sales qualifications. This leader represents the sales department to his group in any current selling activity. He provides his group with lead cards and sales forms, holds sales meetings, and passes along copies of all campaign plans as originated by the sales department.

Instituting the new plan involved several steps, first of which was the preparation of an Employees' Sales Manual. This outlined the new activity, explained the duties of the group sales leaders, told of the commission setup and how to handle prospect cards, and gave brief attention to each of the major load-building appliances.

Meetings were next held with department heads, following which the group sales leaders were delegated. The two primary questions which department heads asked themselves, in appointing a man to the post of group leader were—"Is he sales-minded?" and, "Will his personality command employee cooperation?"

Meetings of the group leaders followed their appointment, to thoroughly sell them on the program and initiate them into the procedure. Monthly meetings of the group leaders are now held, these taking about an hour's time, during the working day. Approaching campaigns are explained and sales tactics developed at these meetings.

GROUP MEETINGS EFFECTIVE

Each group leader conducts from one to four meetings of his group each month, requiring about one-half hour to each meeting on company time, and the employee sales supervisor attends all such meetings. These individual group sessions have stimulated interest, as seen in definite sales increases in the two months following their introduction. In the meter reading division, for example, the two groups increased their sales by 50 per cent in the two-month period. As an example of the sales volume built up in this activity, the sales attributable to the effort of the 42 employees comprising these two groups, reached approximately $6,000 for the first two months following the beginning of group meetings, as compared with $4,000 for the preceding two months.

More will be said of the employee bonus and commission plan at a later point but it is pertinent here to note how the "override" money paid to group leaders on employees' sales is often used to stimulate group activity and interest. In many cases, this "override" is applied by the leaders to reward their respective groups for sales achievements, particularly in the case of inter-group contests. This usually takes the form of some social activity, such as a group dinner.

The employee sales department conducts major monthly campaigns, built around a seasonal appliance appeal. These campaigns carry provision for special sales bonuses and commissions. In addition, each month there is a "feature appliance" sales activity for the employee groups. Some appliance other than that involved in the major monthly campaign

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PIPE PROTECTION

Late Procedures Reviewed at Memphis Natural Gas Sessions

SEVERAL aspects of pipe protection received extended discussion on the program of the A.G.A. Natural Gas Department, at the organization's annual spring meeting held May 6-9 at Memphis, Tenn. In the general report on the meeting offered in *Western Gas* for June it was impossible to give detailed attention to the several excellent technical contributions, and therefore the following condensed review is submitted on three papers bearing on pipe protection.

Pipe Line Corrosion Survey

The subject of making and using a pipe line corrosion survey was dealt with by Dr. Scott Ewing, A.G.A. research associate. The purpose of a survey is to decide where coatings should be applied to the line, and it is presupposed that information is available as to what each type of coating will cost and what percentage of the reconditioning it will eliminate, over the period that the line is expected to be used.

Two things must be done in the field: (1) the soils along the line must be mapped, and (2) soil samples must be properly taken at appropriate intervals. To properly recognize and map the soils, some knowledge must be gained of the types encountered in the locality; this instruction can usually be obtained from the Agricultural Experiment Stations or the U. S. Department of Agriculture. A properly trained man can walk along the pipe line route, map the soils, and collect the necessary soil samples, at the rate of about 8 miles per day. Samples should be taken at about ½-mile intervals, using soil auger, and full and careful notes should be made of all observations and details.

Laboratory tests of the soil samples consist of measurements of total acidity and electrical resistivity, the former by a chemical method and the latter by use of a soil-conductivity cell. One person can test and calculate between 50 and 100 samples per day so that, in all, two properly trained men with a car and proper equipment can do the field and laboratory work at an average rate of 5 miles per day.

The suggested measure of corrosiveness is the percentage of reconditioned pipe in each soil type over a period of 30 years. It has been found on an old pipe line system where records were available that this percentage reconditioned is roughly related to the average acidity and average resistivity of the soil types by the equation:

$$\text{Percentage reconditioned} = \frac{(A\text{-}5)\ 7500}{R}$$

where A equals average acidity of the soil type in milliequivalents per 100 grams, and R is the average resistivity of the soil type in ohm-cm at 60°F. The procedure is then to calculate the percentage of pipe to be reconditioned in each soil type and then construct a table showing the soil type names, length of line in each soil type, expected percentage of pipe in each soil type which will require reconditioning, and expected length of reconditioning to be done in each soil type over a period of 30 years. This gives all the information needed to determine which coatings to use and where they will be applied, assuming the average cost per foot of reconditioning the pipe line is known.

Cathodic Protection

George I. Rhodes, vice-president, Ford, Bacon & Davis, Inc., discussed cathodic protection, with particular reference to bare pipe lines, which heretofore have not been considered amenable to cathodic protection because of the large amount of energy required. On the basis of 1,000-hour tests in highly corrosive soil the minimum definite effective current density, to afford cathodic protection, was found to be about 20 micro-amperes (i.e. 1/50,000 ampere) per square inch; the minimum voltage necessary was about 0.25 volts.

A clean steel electrode, that can be placed very close to the pipe surface, and a potentiometer voltmeter, have been developed for measuring cathodic voltages. This measurement is very important, since current flow varies as the cube of the voltage and therefore an unnecessarily high potential should be avoided.

The installation of a number of ground electrodes in a line parallel and close to the pipe line to be protected avoids forcing large currents through long distances of soil, maintains a uniform voltage along the line, eliminates the necessity for heavy bonds across poorly conductive couplings, elevates the potential of the soil in the immediate vicinity of the pipe—rather than lowering the pipe potential—so that insulated couplings are not necessary beyond the cathodically protected section, and in general makes it possible to maintain a very low but adequate potential with consequent economy of energy so that protection of very poorly insulated or even bare lines appears feasible. The same conceptions point to the possibility of utilizing a series of zinc electrodes to accomplish the same purpose. It would probably be desirable to use a pure grade of zinc, particularly free from lead, so that as the zinc disappears the lead will not exert an increasing counteracting influence. It is indicated that a bare line can be protected with zinc for a 20-year period at a cost of about $130 per mile per inch in diameter.

Corrosion in Distribution Systems

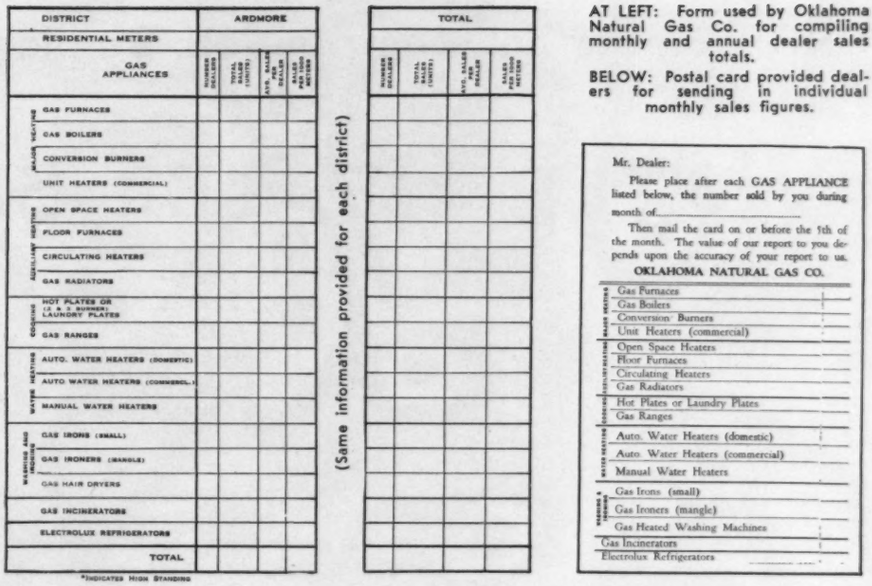
Some aspects of Corrosion Problems in a Distribution System was the topic discussed by Charles F. Turner, chief chemist, East Ohio Gas Co., Cleveland, Ohio. Pipe protection in a distribution area is necessarily different, in some respects, to that on a transmission line, because of streets, paving, proximity of buildings, methods of handling pipe, and stray current electrolysis.

While coatings are available which, if ideally applied, provide insulation against current discharge, it is considered a practical impossibility to actually apply them so as to avoid bare spots, damaged places, cracks, etc. The result is that, under electric discharge stress, the current leaves at these damaged or bare spots and rapidly deteriorates the pipe, whereas if the pipe were bare there would be a uniform discharge with relatively slight damaging effect.

Consequently, in the territory of the East Ohio Gas Co., coatings are avoided in localities where a preceding electrolysis survey indicates the presence or future possibility of electrolysis. In addition to the electrolysis survey a soil survey is made, and from the total information gained instructions are issued to the construction crews showing where coating is to be used and where omitted, where insulating couplings are to be inserted, where shielding is to be provided and how constructed and whether to be bonded, where the original backfill is to be replaced with inert sand,

(Continued on Page 21)

IN THE OUTLINE below of Oklahoma Natural Gas Co.'s load-building program is given the substance of a paper by M. L. Kapp, presented to the A. G. A. Natural Gas Department meeting at Memphis in May. Acknowledgment is made for additional information supplied *Western Gas* by the company, to supplement the paper for the present publication.—*Editor.*



DISTRICT	ARDMORE				TOTAL			
RESIDENTIAL METERS								
GAS APPLIANCES	NUMBER DEALERS	TOTAL SALES (UNITS)	AVG. SALES PER DEALER	SALES PER 1,000 METERS	NUMBER DEALERS	TOTAL SALES (UNITS)	AVG. SALES PER DEALER	SALES PER 1,000 METERS
MAJOR HEATING — GAS FURNACES								
MAJOR HEATING — GAS BOILERS								
MAJOR HEATING — CONVERSION BURNERS								
MAJOR HEATING — UNIT HEATERS (COMMERCIAL)								
AUXILIARY HEATING — OPEN SPACE HEATERS								
AUXILIARY HEATING — FLOOR FURNACES								
AUXILIARY HEATING — CIRCULATING HEATERS								
AUXILIARY HEATING — GAS RADIATORS								
COOKING — HOT PLATES OR (4, 6, 8 BURNER) LAUNDRY PLATES								
COOKING — GAS RANGES								
WATER HEATING — AUTO. WATER HEATERS (DOMESTIC)								
WATER HEATING — AUTO. WATER HEATERS (COMMERCIAL)								
WATER HEATING — MANUAL WATER HEATERS								
WASHING AND IRONING — GAS IRONS (SMALL)								
WASHING AND IRONING — GAS IRONERS (MANGLE)								
WASHING AND IRONING — GAS HAIR DRYERS								
GAS INCINERATORS								
ELECTROLUX REFRIGERATORS								
TOTAL								

*INDICATED HIGH STANDING

(Same information provided for each district)

AT LEFT: Form used by Oklahoma Natural Gas Co. for compiling monthly and annual dealer sales totals.

BELOW: Postal card provided dealers for sending in individual monthly sales figures.

Mr. Dealer:

Please place after each GAS APPLIANCE listed below, the number sold by you during month of.....

Then mail the card on or before the 5th of the month. The value of our report to you depends upon the accuracy of your report to us.

OKLAHOMA NATURAL GAS CO.

MAJOR HEATING	Gas Furnaces
	Gas Boilers
	Conversion Burners
	Unit Heaters (commercial)
AUXILIARY HEATING	Open Space Heaters
	Floor Furnaces
	Circulating Heaters
	Gas Radiators
COOKING	Hot Plates or Laundry Plates
	Gas Ranges
WATER HEATING	Auto. Water Heaters (domestic)
	Auto. Water Heaters (commercial)
	Manual Water Heaters
WASHING & IRONING	Gas Irons (small)
	Gas Ironers (mangle)
	Gas Heated Washing Machines
	Gas Incinerators
	Electrolux Refrigerators

Oklahoma Natural's Dealer Cooperative Plan

By M. L. KAPP, Oklahoma Natural Gas Company

THE Oklahoma Natural Gas Co. entered into active gas appliance merchandising in 1929 and continued until the anti-marchandising law was passed in the Spring of 1931. We disposed of all appliance stock by December, 1931, then organized our Gas Sales Department, placing salesmanagers and engineers in four of our eight districts.

In October, 1931, our first home service department was opened in Oklahoma City, our largest district. This proved so satisfactory that we opened another department in our Tulsa District in September, 1932.

M. L. Kapp

In 1931, our company reduced rates 21 per cent. This, together with the effect of the depression, reduced our gross revenue to such an extent that in the early part of 1932 we found that immediate action was necessary to protect us from an operating deficit.

We made a study of each department and reduced our expenses to a minimum but this was not enough and we realized we must have more gross revenue.

During the years 1932, 1933 and 1934, we carried on special load building campaigns with some dealer cooperation. We were successful in getting dealers to take on outside salesmen. Our conversion burner campaign, the installation of which benefited the plumbers, interested this group in more aggressive selling. We found we were making progress so during 1934 we placed salesmanagers in all districts, opened two more home service departments and increased our home service personnel from two to eight. Also, we made a complete survey of every home in our territory. These cards were used by our sales department and were available to our dealers for listing of prospects.

We now realized we needed a definite sales program for our salesmanagers and one that would develop good dealer cooperation. After a study of many sales plans, campaigns and our dealer reports we drafted our present sales program.

We have used these dealer reports for several years. We furnish the dealers with penny postal cards on which a list of all appliances is printed with space so they can report quantity of sales. These cards are tabulated and we complete our monthly report which shows number of dealers reporting, units sold by classification, units per dealer and units per 1,000 consumers. This information is shown for each of the eight districts comprising from 6,000 to 40,000 meters. A copy of each monthly sales report is delivered to each cooperating dealer, which gives them the volume of sales in their territory.

Our sales program was formulated in December, 1934 and we held dealer banquets in each district. At these dinner meetings we explained our sales program which we hoped would be of great benefit to them. Our sales program was developed in keeping with a calendar showing the appliances to receive special sales promotion for each month of the year, such as: gas house heating in January and February, water heaters in March and April, gas ranges in April, Electrolux from March to July inclusive, etc.

Our advertising in newspapers, on our gas bills, envelopes and our bill stuffers ties in with each month's promotion. Our dealers are advised of our ads and the dates they are to be run, so they can run tie-in copy if they wish. They are doing a fine job of cooperating and their confidence in the company is best expressed by their invitation to our salesmanagers, engineers and service men to attend their sales meetings.

Our home service department is playing a big part in our dealer cooperation. Last year we held cooking schools in 21 of our towns. This year we have completed cooking schools in all 53 of our towns. In these schools we used the gas range, Electrolux, water heater and space heater. Our dealers in almost every case sold many appliances during the schools, as well as receiving many prospects.

We hold floor demonstrations in our offices and at our dealers' stores.

Our home service department representatives make home calls on all purchasers of ranges and Electrolux; complaint calls given to the dealers are turned to us and individual calls are made, thus aiding in keeping the appliances sold.

Our window displays and sales floors are arranged with gas appliances in keep-

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Job Training for Distribution Employees . . . PART III

WATER HEATER SERVICING

By LEE HOLTZ

General Superintendent, Manufacture and Distribution, Southern California Gas Company

TWO articles on other phases of the Southern California Gas Co.'s comprehensive job training program have preceded the current one on water heater servicing. In the November, 1934, issue Mr. Holz discussed general aspects of the work and gave the gas range servicing course, and in the January issue outlined the course on gas refrigerator servicing.—*Editor.*

OF the several courses given by the Southern California Gas Co. in job training of distribution employees, we believe the water heater course of instruction to be one of the most important in the curriculum, since water heating furnishes one of the principal loads on the system.

Lee Holtz

In view of the fact that in Los Angeles County alone, there are over 80 different kinds of water heaters manufactured at the present time, and in consideration of the fact that there are many obsolete makes of water heaters, plus the many that are shipped in from other parts of the country, the matter of preparing the course to cover the situation presented quite a problem.

In servicing water heaters, it is the policy of the Southern California Gas Co. to make all necessary burner and minimum flame adjustments and simple adjustments on thermostats. If the heater is of an antiquated make and in need of repair, or if there seems to be a possibility that an attempted adjustment of the thermostat may result in damage to the heater, the service man gives the customer the names and telephone numbers of the water heater dealer and one or more plumbers in the neighborhood who can make the adjustments.

The training course on water heater servicing consists of five classes, each class lasting for two hours. Ordinarily, a service man attends class once each week, thereby covering the course in a period of five weeks.

At the beginning of each class period, the men are given an opportunity to ask questions and give their experiences concerning the problems on water heater servicing that they have encountered during the previous week. It has been found that a great deal of benefit is derived from the discussion of such problems.

The classes are so conducted that the men spend about 30 per cent of their class period in the classroom and about 70 per cent of the period in the appliance instruction room. In the appliance instruction room, a number of the most prominent makes of water heaters are installed, plus those types that give the most trouble. These appliances are fully connected to operate under practical conditions. There is also a portable rack with various types of water heater burners and automatic devices which can be connected by means of a portable hose with patented quick-change connections, to a regulated pressure gas outlet or to the portable demonstration board which is used for showing the effect of different pressures, plugged house lines, etc. The appliance instruction room also contains displays of water heaters and all of their parts in cut-away sections to demonstrate the operation of these units.

"The Gas Appliance Installation and Service Manual, Volume II, Water Heaters," published by the American Gas Association, is used as a text in the training course on water heater servicing. The outline for the company's course, given below, has many references to page numbers in the A. G. A. manual where the detailed instructions covering the particular subjects may be found. In addition to the manual and the outline of the course, we have prepared drawings and descriptions of many automatic control mechanisms, as well as data sheets which give the gas consumption capacities of all makes and sizes of water heaters which are likely to be found in the customers' homes. Because of limited space, these illustrations and tables cannot be presented in this article.

TRAINING COURSE ON WATER HEATER SERVICING

LESSON ONE

I. Each member of the class will receive a copy of the A.G.A. Water Heater Manual.

II. The different types of water heaters, their advantages and disadvantages, and the kind of service each is best suited for (Pages 1-23 of Manual).

III. Procedure to be followed in servicing water heaters.

A. Obtaining admittance into house:

In obtaining admittance to the house, the service man should go to the rear door, and after knocking or ringing the door bell, should allow sufficient time for the customer

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A corner of the appliance instruction room at Southern California Gas Co.'s distribution headquarters, arranged for water heater demonstration. Various water heater burners are mounted on the portable rack, with hose connection to gas supply.

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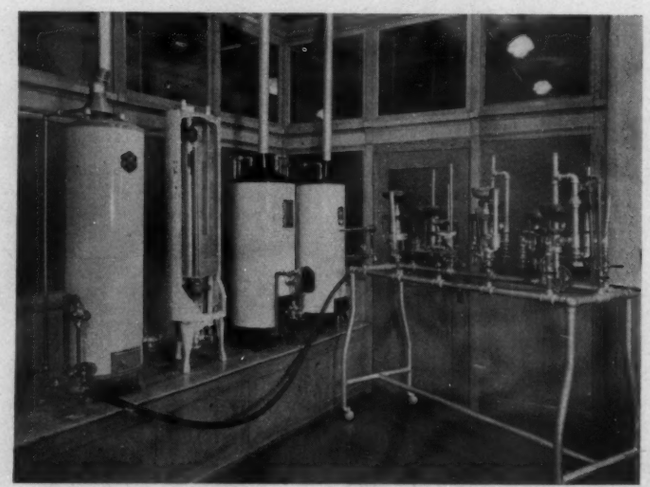

to come to the door before repeating the knock. He should address the customer, "Good morning", or "Good afternoon, I am from the Gas Company and am here to service your water heater," also showing his employee's badge as identification if necessary. Never speak of the call as "in answer to your complaint." Substitute, "your request for service." When entering the house, see that your feet are clean, and always remove your cap or hat.

If the heater is new and has never been used before, advise customer to notify plumber or company that installed the heater that the gas is on and to light and adjust the heater. Explain to the customer that this is the best way to get the benefit of the manufacturer's guarantee of the heater and that the plumber or company that installed the heater usually prefers to light and adjust them the first time.

B. Placing canvas and paper on floor:

Before doing any kind of work around the heater, place canvas on floor to protect the floor from marks of tools or scuff marks from your shoes, and over this place several sheets of newspaper. The newspapers will protect the canvas from soot and rust, which would soon render it unusable. Your tools should be placed on top of this.

C. Checking house line pressure:

Before proceeding with any adjustment on the water heater, measure the gas pressure in the house line and satisfy yourself that it is within the allowable limits. This usually can be done most conveniently by connecting the U gauge to one of the burner spuds on the gas range.

D. Information for customer: The service man must also be prepared to give information where it is requested by the customer or at times when it can be volunteered tactfully.

IV. Manually operated heaters—tank and side arm (P. 49).

A. Adjustment of burners:

1. Cleaning of burners, etc. (P. 45).

2. Burners with fixed orifices (P. 47)—accurate B.t.u. input.

3. Burners with adjustable orifices (P. 49)—accurate B.t.u. input.

B. Remote control (P. 50): Safety pilot.

C. Flues (Pp. 37-40):

The top of the flue pipe, or the chimney if the flue pipe is connected into a chimney, should be at least 12 inches higher than the highest part of the roof and be properly capped. The chimney, or top of the flue pipe, should be so located with reference to any higher building nearby that wind currents will not form eddies and force the air downward in the shaft. A shifting cowl which will always turn the outlet away from the adverse current will promote better draft.

The flue should run as nearly straight as possible from the base to the top outlet. The outlet must not be capped so that its area is less than the area of the flue. The flue should have no other opening above the water heater vent.

The value of the flue depends on area and velocity. Velocity alone is no proof of a good draft. There must be sufficient area to carry the gases.

Test for proper draft by holding a lighted match close to the apron of the back draft diverter, which will show whether there is something radically wrong with the draft conditions. If the match flame is not drawn into the back draft diverter, it is an indication of poor draft. If the match flame is extinguished by being drawn into diverter, it is an indication of too much draft. These tests should not be made with a cold flue. In either case, advise customer of conditions and that vent be corrected, but in case of any doubt as to whether vent is at fault, call your supervisor before advising customer.

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One of the demonstration boards used in job training work at Southern California Gas Co., showing mounted cutaway sections of valves, burners, and automatic temperature control units.

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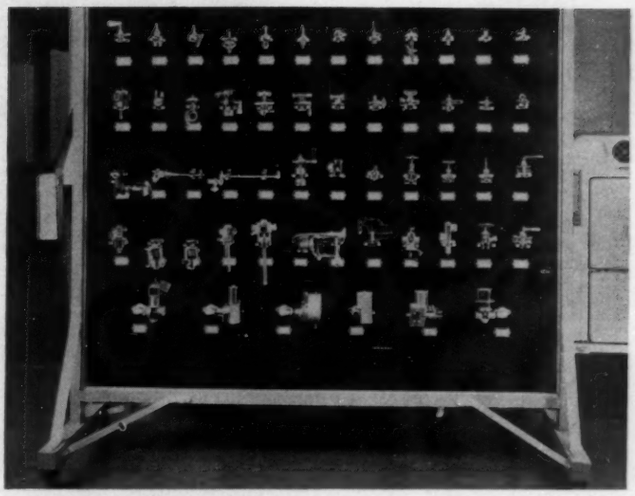


LESSON TWO

I. Automatic storage heaters (Pp. 50-52).

A. Slow recovery heaters (P. 50):

1. Safety pilots (Pp. 58-59): Generally speaking, safety pilots should open within five minutes. When the safety pilot flame has been extinguished, they should also close within five minutes. *In any case, if pilot is out and gas is flowing, turn off gas and wait at least ten minutes before lighting.*

a. Snap acting: Snap acting safety devices should be adjusted by means of the spring tension adjustments so that the valve opens and closes with a positive snap movement.

b. Quick acting.

c. Gradual acting: Special attention must be given to the adjustment of gradual closing type safety pilots which will be found on some heaters.

d. Location and height of flame:

Pilots should be located just below the burners. If the pilot flame has been impinging, after correcting location, be sure to remove all resultant carbon before lighting. The pilot flame should be approximately ¾-inch high. It should be just high enough to touch the control element, and it must be high enough to assure opening of the safety pilot valve so as to pass the full gas supply. If the pilot flame is too high, it may cause the water in the tank to reach too high temperatures. This may result in the gas supply being shut off by a high temperature cut off, in the opening of a pressure relief valve, allowing water to escape from the heater, or in the backing of hot water into the cold water supply line.

If the pilot flame is too low, it may go out or may not assure opening of the safety pilot valve so as to pass the full gas supply. Too low pilot flame may cause slow ignition and a check should be made to see whether the main burner is effectively lighted from the pilot.

e. Pilot goes out (P. 66): When the pilot goes out, in addition to the items listed in the manual, the following items should be checked:

(1) Excessive draft around the heater.

(2) Excessive draft through the heater.

(3) When main burner shuts off pilot is extinguished.

(4) Condensation dropping on pilot.

(5) Faulty safety valve.

A check to see that the safety pilot valve closes the main gas supply tightly is necessary. If not, check valve seat for foreign matter. Also, after adjusting, be sure safety pilot opens main gas supply.

2. By-pass flame serving as pilot (P. 50).

3. Main burner (P. 51):

a. Burner troubles (P. 65): Flash back may also be caused by a leak through the thermostat valve.

4. Demonstration of method used in dismantling a full floating tank.

LESSON THREE

I. Automatic storage heaters (continued).

A. Slow recovery heaters (continued).

5. Flues—same as Lesson One, IV. C.

6. Thermostats:

a. Function of thermostat (P. 55).

b. Proper temperature of hot water (P. 56):

At the higher temperatures, the lime in solution precipitates much faster and is deposited as scale on the inside of the water tank. This reduces the efficiency of the heater and the gas consumption is increased. This also retards the normal recovery. High temperatures also cause rapid oxidation on the inside of the tank.

c. Operation (P. 56): (1) Snap acting (P. 57); (2) Quick acting (P. 57); (3) Throttling (P. 57).

d. Adjustment (Pp. 57-58).

e. Troubles (P. 66).

7. Advise customer after adjustment has been made that if no water has been drawn from an automatic storage heater and the burner does not shut off in an hour, turn off the gas and notify plumber of company who installed the heater.

LESSON FOUR

I. Automatic storage heaters (continued).

B. Quick recovery heaters (P. 52):

1. The procedure as outlined in Lesson One, III, is followed in servicing, starting with pilots and continuing as shown in pre-

(Continued on Page 51)

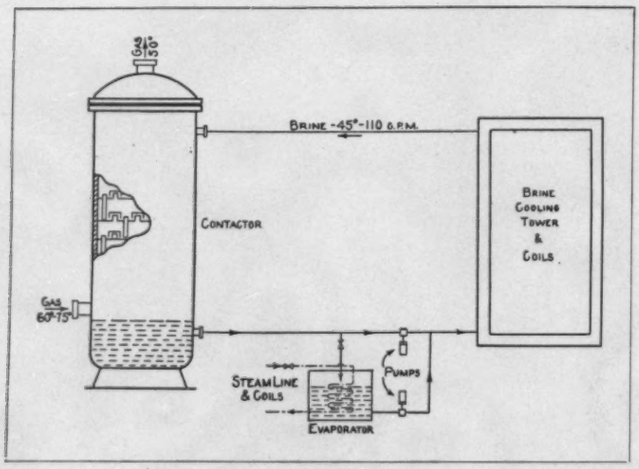


FIG. 1.
Flow diagram of dehydration plant using calcium chloride brine, Cut Bank, Montana.

Dehydrating High Pressure Natural Gas

● ARTHUR B. ALLYNE, Southern Counties Gas Co. of California, Los Angeles; addressing Natural Gas Department, American Gas Association, Memphis, Tenn., May 6-9, 1935—(Abstract by WESTERN GAS).

THE dehydration of high pressure natural gas is understood to mean the lowering of the dew point of the gas, before it enters the pipe line, to a point slightly below the lowest temperature the gas will reach during its travel through the given line. When this is accomplished, the deposition of water at any point whatever in the line is prevented.

Arthur B. Allyne

It has been definitely determined by the experience of the industry that severe internal corrosion of a high pressure gas line may occur due to the pressure of even minute quantities of oxygen and/or hydrogen sulphide and liquid water.

In localities where the gas was thought to be free of corrosive impurities, the first indication of trouble has been excessive pressure drops and the collection of large volumes of corrosion products. It has been shown that sufficient quantities of oxygen and hydrogen sulphide, heretofore undetectable with ordinary testing equipment, have been present to account for this corrosion.

Of almost equal importance to internal corrosion, has been the occurrence of clogging and actual freezing solid of pipe lines. These freeze-ups are quite common and result from either the actual freezing of water collected at low spots in the line or the formation of hydrocarbon hydrates due to the presence of this water.

Engineers are generally agreed that corrosion will not proceed if liquid water is not present, or if neither oxygen nor hydrogen sulphide is present. Since a sufficiently complete removal of oxygen or hydrogen sulphide is not possible with present knowledge, the most practical procedure is to prevent the condensation of water in the pipe lines. Furthermore, the prevention of liquid water in the pipe line prevents the formation of either water or hydrocarbon ices.

The cost of dehydration is sufficiently low to make it a practical refinement for natural gas. Figures taken from both actual and theoretical dehydration plants, indicate the cost of dehydration will fall within the range of 0.2 to 0.75 mills per M cu. ft. of gas treated.

Up to the present, two general methods for dehydrating gas have been utilized. One method employs cooling or refrigeration to condense the water from the gas, while the other depends upon absorption or adsorption of the water from the gas.

For dehydrating natural gas at pressures from 300 to 600 pounds, considerable reduction in the size of the plant can be made by employing an absorption or adsorption process, since the gas at these pressures contains but a fraction of the water to be removed that it does when saturated at atmospheric conditions. This advantage is offset in part, however, by the fact that methods employing cooling or refrigeration are somewhat simpler in design and possibly present fewer operating problems.

At least three solid materials have been suggested for use in dehydrating natural gas, although as far as is known none has been adopted as yet on a commercial scale. These materials are activated alumina, anhydrous calcium sulphate, and Silica Gel.

The Southern Counties Gas Co. has done considerable experimental work with these materials and, as a result, designed a dehydration plant employing Silica Gel as the dehumidifying agent, for installation at the outlet of a compressor plant.

It would be possible, with Silica Gel, to completely remove all of the water vapor from the gas, but since in this locality, ground temperatures below 60° are not encountered, it is only necessary to lower the dew point of the gas to approximately 58°. This would be accomplished by putting a portion of the wet gas through an adsorber containing the gel, and by-passing the remainder.

While one adsorber is dehydrating the gas, the other one is reactified by sweeping the bed of material with natural gas heated indirectly by means of a gas heater to 400°. The only gas actually consumed during reactification in this process is that burned in the heater, since the heated gas used for sweeping out the adsorber is returned to the compressor plant intake.

While glycerine, sodium thiocyanate, sodium thiosulphate, calcium chloride and other hygroscopic solutions have been adapted in varying degrees to the dehydration of manufactured gas and low pressure natural gas, the only one so used for high pressure natural gas dehumidification on which information is available is the Montana Power Co.'s plant located at Cut Bank, Montana. This installation uses calcium chloride, both for cooling the gas and as an absorbent for water removed. The flow diagram is shown in Fig. 1. Due to extremely low ground temperatures in this locality (as low as 30°) it is necessary to lower the dew point of the gas from a range of 60° to 75° to between 25° to 30° by pre-cooled brine.

Under less severe climatic conditions, it is thought that the pre-cooling of the brine could be eliminated and the circulation rate greatly reduced. The strength of the brine is maintained by passing a small part of it through a steam coil evaporator.

Increased Allotment For Bureau of Mines Research Activities

An appropriation of $1,970,311 has been set aside for use of the Bureau of Mines, effective July 1, the beginning of the new fiscal year. Due to the increased allotment, which amounts to $600,000, the Bureau will be able to resume discontinued or curtailed research activities in the compilation of information on the production, storage and utilization of natural gas and petroleum with a view to conservation. Investigations of health hazards in the mineral industries, which were suspended two years ago, will also be resumed.

Degree Day and Its Relation to Sales

● S. D. WHITEMAN, Sioux Falls Gas Co., Sioux Falls, South Dakota; addressing Mid-West Gas Association 1935 Annual Convention, Omaha, Nebraska.—(Abstract by WESTERN GAS).

THE term "Degree Day" was originated in the gas industry and later standardized by the American Gas Association. The degree day is a figure which is the product of one day, times the number of degrees the average mean temperature outside is below 65° F.; thus, to determine the number of degree days per day, subtract the mean daily temperature for that day from 65 and multiply by one. For example, if the mean temperature for a day is 40° the number of degree days is $(65°-40°)\times 1$, or 25. The sum of the degree days for each day of the heating season gives the number of degree days for the season. Comparing this figure with the average over a period of years gives the relative severity or mildness of any heating season from the standpoint of heating of buildings. A base of 65° is chosen because when the mean temperature falls below this figure heat is required for residence buildings; furthermore, fuel consumption varies inversely with the temperature below this point so that, for example, on a day when the temperature is 45°, twice as much fuel will be consumed as on a 55° day. It must be remembered that this 65° is an average 24-hour figure and usually allows for a day-time 16 hours at 70° and an eight hour night temperature of 55°.

Fuel consumption will be proportional to the seasonal degree days, but one interesting sidelight on the use of the degree day is that its application may vary under different conditions. For instance, while the unit gives remarkably accurate results for gas-fired installations in northern climates, it does not apply with the same accuracy in milder climates. It has been found necessary, therefore, to introduce variables in some cases. Another interesting point is that the southern cities have poorer load factors than the northern cities. For example, Galveston, Texas, will consume during January 34 per cent of the total amount of gas used for the heating season, whereas Bismarck, North Dakota, will use only 19 per cent during the same month.

The number of degree days is a very important factor for the pipe line company or manufacturing plant, and distributing company, to carefully watch, especially if they sell any quantity of heating gas, as the average domestic customer may use 15,000 cubic feet of gas per year and should he become a house heating customer in addition he may then use 175,000 cubic feet in addition, or more than a tenfold increase.

For factories, garages and other industrial buildings, the number of degree days will be quite different because they are not required to carry daytime temperatures as high as 70°. Special charts must be made for these buildings, using a different basis from that of residence heating, more complicated than a simple correction factor applied to the latter. Additional complications to any degree day basis are introduced by such factors as direction and velocity of wind, and solar radiation. In order to sell heating properly, it is necessary to carefully check prospective customers' heating requirements so that the correct size and kind of equipment is recommended; this must be followed up by proper installation, and education of the customer to keep him sold on gas heating.

The problem of keeping a new customer sold usually begins after the customer receives his first bill for heating and again in mid-winter when he receives his larger bills. The main causes for high bill complaints are excessive temperatures in the house both day and night, careless operation of the heating system, abnormal outside temperatures, abnormal wind velocities, faulty house construction, defective thermostat or automatic valve control, burner setting too low, poor thermostat location, open dampers and fireplace flues. Considerable importance should be placed on the training of gas company and dealer employees in the handling of heating complaints, and if this is done efficiently the load should remain on the lines for many years to come.

Effects of Leaking Gas on Shade Trees

● CARL FENNER, Assistant City Forester, Lansing, Mich.; addressing Michigan Association of Municipal, County and Public Utilities Foresters, 1935 meeting at Michigan State College.—Abstract by WESTERN GAS.

THOSE constituents of gas that are known to be harmful to vegetation are ethylene, cyanogen compounds, and hydrocyanic acid. These are present in manufactured gas but not in natural gas. Natural gas, however, due to being transmitted usually under high pressure, is generally very dry, and a stream of dry gas among the roots of vegetation is an abnormal condition which can do considerable damage and even destroy plants.

Considering again manufactured gas, a large number of investigations with plants and trees, by Doctors Crocker, Hitchcock and Zimmerman, at the Boyce Thompson Institute for Plant Research, Yonkers, N.Y., has shown: that oxygen displacement from the soil, by the flowing gas, is not a contributing factor, as it normally will not occur to a marked extent, or before poisoning sets in from gas constituents; that the roots are injured by the residue of gas that remains in the soil as well as by the flowing gas.

Slow flows of gas (2 to 5 cubic feet per day) cause a bending downward of leaves, an irregular yellow coloring, and a falling off of a few green leaves. Rapid flows of gas (sufficient to cause a very noticeable odor) cause a wilting and drying, followed later by a browning of all the leaves of a tree. Medium flows are often difficult to diagnose, and gas presence detection may be assisted by the use of small potted tomato plants, which are very sensitive to manufactured gas and show a turning down of leaves when placed in a hole in the earth. It should also be remembered that trees may die from other causes than gas—such as dryness—so that care should be taken in all interpretations.

In cases where trees show definite and advanced symptoms of gas poisoning, to the extent of wilting or drying, it is a waste of money to try and save them, and attention should be given only to nearby trees. If the trees show mild symptoms they can often be saved by aeration and water flooding. Aeration, by introducing compressed air through pipes thrust into the soil, drives away the gas; flooding with water removes the gas residue. In cases where gas has been found in the soil by other means, and vegetation has not yet been affected, aeration should be practiced at once.

Okla. Sales Tax Law Revised to Penalize Violating Vendors

The Oklahoma State Legislature has passed a new sales tax law requiring that the vendor of gas, electricity, water, transportation or communication service, levy a sales tax upon the consumer for such service, and penalizing the vendor for absorbing or failing to collect said tax from the consumer with a fine not to exceed $100 for the first offense nor more than $500 or 60 days' imprisonment, or both, for a second offense.

New Developments and Lampblack Problems With Reformed Natural Gas

● As described to the Joint Committee Conference of the Production and Chemical Committees, American Gas Association, New York, N. Y., May 13-15, 1935.—(Abstract by WESTERN GAS).

STUDIES of the formation and removal of lampblack from reformed natural gas at the Water Gas Plant of the Chicago By-Product Coke Co. were outlined for the conference by H. B. Young of the company.

When lampblack was formed in the set, it deposited in the relief holder and the tubular coolers as a mixture of lampblack and very viscous tar. Steaming had no effect on this thick material, but recirculation of hot water gas tar thinned with primary condensate from the light oil plant was effective in preventing stoppage of the tubular coolers.

Removal of lampblack from the gas before the holder was investigated by means of an experimental scrubber. Water or hot water gas tar removed an appreciable amount of the lampblack, but complete removal could not be attained.

Change from a coke having an ash fusion temperature of 2,725°F. to one of 2,300°F. resulted in almost complete elimination of lampblack and fly-ash from the gas. No serious operating conditions were encountered with the new coke, although some modifications were necessary to the operating cycle to obtain a high output of gas.

Equipment and operation was as follows:

Generator used: 11 feet diameter. Grate area—63.61 sq. ft.

Average depth of fuel bed—9.0 feet.

Fuel used: Coke oven size—All over 1-inch Grizzly Screen.

Steam used: Saturated at 5 pounds.

Generators charged after every 12 runs.

23.2 runs per hour.

Louisville Experience

Leon J. Willien, operating gas engineer, Byllesby Engineering and Management Corp., Chicago, described experimental work by the Louisville Gas & Electric Co. during the past five years. Instead of producing a minimum amount of carbon-black the object of the Louisville experiments has been to produce a maximum amount and recover it for commercial purposes.

The reforming process consists in passing the natural gas without steam through a bed of incandescent coke in the generator of a 3-shell water gas machine. The reformed gas with the carbon-black in suspension, leaves the top or bottom of the generator depending upon whether gas passes up or down through the generator. The gas does not pass through the carbureter and superheater but passes through a special connection to an electrical precipitator and a dust collector which removes 98 per cent of the carbon-black from the reformed gas.

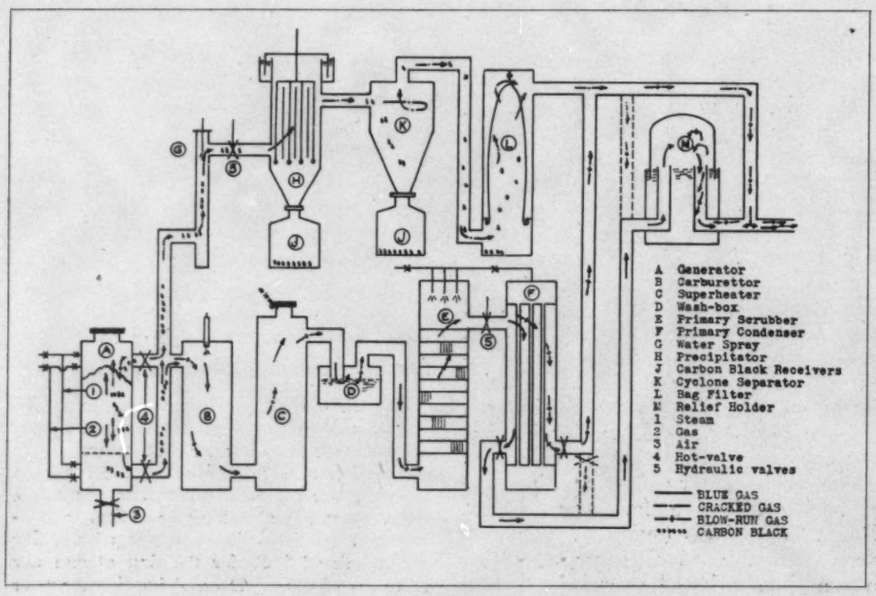


FIG. 1. Blue gas-cracked gas plant.

Fig. 1 shows the equipment and a flow diagram of the operations.

It has not been possible to remove the last traces of carbon-black from the gas before it reaches the relief holder. The bag filter works satisfactorily for a while but eventually the pores of the material become clogged. The traces of carbon-black that are carried to the relief holder with the gas pass through an exhauster, a bubble washer and are removed by the dry purifiers. It is believed that a scrubber or a perforated plate bubble washer with oil is the only thing which will remove the last traces. The blue gas and air purge gas should also pass through a scrubber.

The maximum amount of carbon-black recovered was about 8 pounds per M c.f. of natural gas reformed. Considerably more was produced, which apparently was deposited in the fuel bed. The velocity of the gas through the fuel is an important factor. More carbon-black is recovered with high velocities than low, and quality is better.

Terre Haute Method

B. P. Mulcahy, research chemist, Indiana Consumers Gas and By-Products Co., Terre Haute, Indiana, outlined production of reformed natural gas in two Western Gas Construction Co.'s 9-foot blue gas generators with automatic controls.

The gas leaves the generator house through the wash box to tower scrubbers (8-foot diam. 60 feet High Grid Type water recirculated except for make-up to maintain low acid concentration). From here the gas passes through a purifier for hydrogen sulphide removal and then to the plant holder.

The gas leaves the generator at an average B.t.u. of about 460. It is partially enriched (to 520 B.t.u.) by means of a constant volume hand throttle on its way to the plant holder. Returning from the holder on its way to the distribution lines—the balance of the enrichment (to 570 B.t.u.) is effected by automatic means. All enrichment is accomplished with 980 B.t.u. (approx.) natural gas.

Very little lampblack is removed in either of the scrubbers where the water is recirculated or in the purifier. The gas passes through the lower half of the first scrubber (8-foot diam.) with about 27 feet of grids and then to the second scrubber (in series) (8-foot diam.) with about 40 feet of grids.

The preponderance of the lampblack is removed in boxes after the plant holder. These boxes, three in number, are arranged in parallel. Each box is 11 feet in diameter and 5 feet high. An oxide-coke mixture for hydrogen sul-

phide removal fills the lower 24 inches, on the top of which is spread 6 to 8 inches of fairly fine pine wood shavings banked up around the box edge to prevent channeling of the gas passage. The shavings bed serves as a filtering medium to remove the lampblack.

It has been found that these shavings boxes require changing in from one to three weeks due to building up and excessive back pressure, developed by the packing of the shavings rather than carbon deposition.

Pipe Protection Trends

(Continued from Page 14)

and where permanent electrolysis testing stations are to be provided for future observations.

Every effort is made to avoid construction of a line in a location where it may be subjected to transverse action of currents traveling across the line from the car rails to some other point; where this cannot be avoided a backfill is made with sand. Services are coated except under unavoidable cross current conditions, and given careful attention and periodic inspection, particularly when supplying public buildings.

Peoples Gas Light Insulation Campaign Shows Progress

To encourage gas house heating prospects to insulate their homes and thereby become better prospects, The Peoples Gas Light and Coke Co. is offering a time payment plan on insulation costs, payments to be made with the gas bill over periods as long as five years. Advantages of having a cold home during summer months are being stressed, as well as winter fuel savings. Already more than 1,000 homes have accepted the offer.

Insulation is installed by private contractors, a thick layer of the insulating material being blown into roof spaces or attic flooring, as described in *Western Gas* for April, 1935. Properly applied, it reduces transfer of outside temperatures into the house by as much as 80 per cent, and effects savings in winter heat bills which gas company analysis shows to be sufficient in most cases to cover the monthly payments for insulation.

Tulsa Fails to Collect Rental for Use of Streets

The city of Tulsa, Oklahoma, in June failed in its second effort to collect rental from the Oklahoma Natural Gas Co. for use of streets and alleys when the United States District Court dismissed the city's suit for $282,000 after hearing arguments of the counsel. In the state district court for Tulsa County a similar action failed about a year ago. It was indicated that an appeal would be taken.

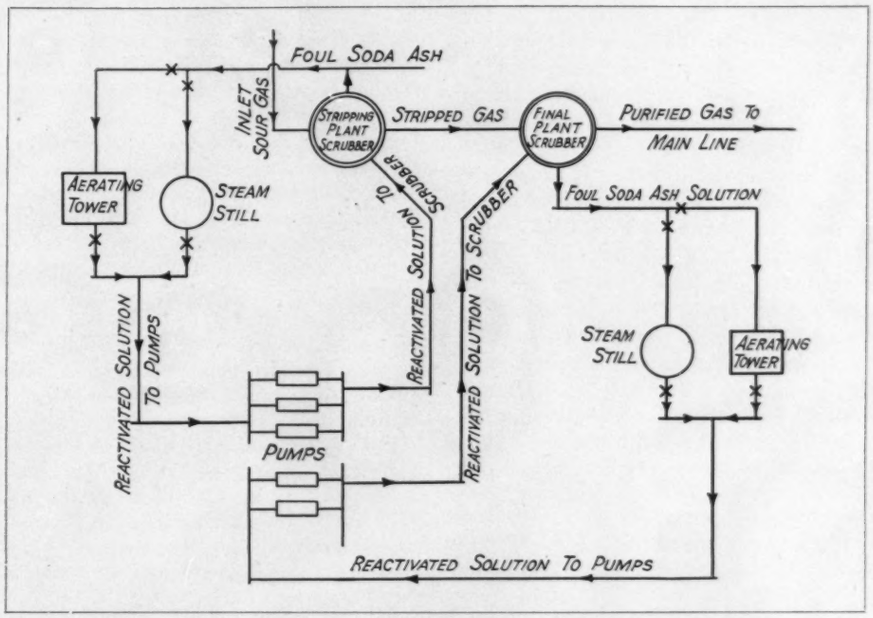


FIG. 1. Flow diagram, hydrogen sulphide purification plant.

Hydrogen Sulphide Removal...Problem on El Paso Natural-Western Gas Co. Line

● **A. L. FORBES, JR., General Superintendent, El Paso Natural Gas Co., El Paso, Texas; addressing Natural Gas Department, American Gas Association, Memphis, Tenn., May 6-9, 1935—(Abstract by WESTERN GAS):**

THE El Paso Natural Gas Co. and Western Gas Co. pipe line system originates in the Lea County field, in the extreme southeastern part of New Mexico, and runs 650 miles to its furthermost point of consumption, serving such centers as El Paso, Texas, Tucson and Phoenix, Ariz., Deming, N. Mex., and Cananea, Mex. In all, 715 miles of main line comprise the system, made up largely of 16-inch, 12¾-inch and 10¾-inch pipe. Operating pressures range from 450 to 600 pounds. Four compressor stations are located along the line, three of 2,280 hp. and one of 1,520 hp.

Among operating problems on this transmission system the foremost is that involved in removing hydrogen sulphide from the gas.

The gas in the Lea County, New Mexico field, from which this company receives its gas requirements, contains approximately 300 grains of hydrogen sulphide per 100 cu. ft.

The sour gas is purified in two purification or treating plants. (See Fig. 1 for flow diagram) These treating plants are similar in construction and each consists of two sets of scrubbing towers which were developed by this company and in which a solution of soda ash and water comes into intimate contact with the sour gas under a pressure of 450 lbs. The two sets of scrubbers are operated in series; the first set acting as a stripping plant and the latter as the final cleaning plant.

After the soda ash solution has absorbed the hydrogen sulphide in the gas, it is reactivated either by aeration or heat and is then picked up with pumps and re-circulated in a continuous cycle, the gas passing from the stripping plant into the finishing plant where it comes into contact with the freshly reactivated solution and thence into the main line. By operating the scrubbing towers in series in the above manner, a more consistent result in purification can be obtained. Results of hourly tests made on the purified gas indicate the presence of approximately three grains of hydrogen sulphide, mercaptans and other sulphur compounds per 100 cu. ft. However, more elaborate tests are run periodically in this company's field laboratory, the results of which show that no hydrogen sulphide is present until the results of the hourly field tests exceed six grains per 100 cu. ft. These mercaptans and other sulphur compounds furnish a distinct odor to the purified gas which is very helpful in detecting leaks in the main line as well as in domestic consumer's premises.

Unusually high depreciation in the lines used to circulate the soda ash solution is experienced, chiefly on account of the presence of oxygen in the solution which it has picked up during its repeated aeration. The average life of these lines is three years. However, in those instances where heat instead of aeration has been used to reactivate the soda ash solution, no unusually rapid depreciation has been observed and this company has found that by using heat to reactivate the soda ash solution, similar results in purification were obtained with approximately 60 per cent less soda ash solution than is required where aeration is used in reactivating the solution. Also, this method appreciately decreases maintenance costs on pumps, circulating lines and other equipment.

High winds which prevail in this territory during the spring months blow large amounts of soda ash solution from the aerating towers and in the winter months it is necessary to use steam in the towers to prevent the solution from freezing on its way down the aerating towers.

The sour gas often brings oil over with it into the treating towers and causes considerable trouble and additional expense. The oil thus brought over emulsifies with the soda ash solution and causes foaming in the chamber where the gas is separated from the solution. Considerable gas is lost and fresh soda ash must be added when this occurs. The oil finally works itself into the aerating tower basin where it is skimmed off.

This past winter the maximum amount of gas treated in one day was 47,000,000 cu. ft. and it might be of interest to know that no internal corrosion has been noted in the main line although numerous inspections at various points have been made.

Operating Temperature and Combustion

● **American Gas Association Testing Laboratory Report No. 746: "Research in the Effect of Operating Temperatures on the Combustion of Industrial Gas; prepared for Committee on Industrial Gas Research. (Abstract by WESTERN GAS):**

THIS bulletin deals with an investigation made on four furnaces, two of the water wall type and two of the refractory wall type, all similar in size, to determine the effect of wall temperature on combustion. These furnaces were designed to burn totally premixed room temperature air and gas, and provision made for the exact determination of flue gas temperatures, analyses and compositions, and input rates. Fig. 1 shows cross section of one of the water wall furnaces, the combustion chamber being 2-1/16 inches in diameter and 13-⅛ inches long.

Fuel gases used were 1135 B.t.u. natural gas and 560 B.t.u. coke oven gas with specific gravities of 0.65 and 0.38 respectively. Flue gas temperatures, up to 2200 degrees F., were measured by the A.G.A. High Velocity Thermocouple described in Laboratory Report No. 723. For temperatures above this the Spectral-Line Reversal Apparatus was adapted. Fig. 2 is a schematic sketch of this apparatus. It consists of a tungsten band lamp, heated by alternating current controlled by suitable transformer and resistances measured by an ammeter, the brightness temperature of this lamp being determined by calibrated optical pyrometer. This lamp, which acts as a continuous radiating body, is focused by the lens into the center of the flue gas stream. Monochromatic radiation in the flue gas stream is secured with sodium salts, and the double spectral lines of the sodium vapor when viewed through the spectroscope are seen as bright lines upon the continuous spectrum from the band lamp if the latter is cooler than the flame. If the brightness temperature of the band lamp is greater than the temperature of the sodium vapor, the bright lines reverse and appear dark on the bright background of the band lamp spectrum. When the temperatures of the two sources are equal the sodium lines are just at the point of reversal or "faded out."

Sampling of flue gases was done with water-cooled quartz tube, and the samples analyzed by modified Orsat and Iodine Pentoxide apparata. Combustion was considered complete with the attainment of 0.5 per cent of carbon monoxide plus hydrogen.

The results obtained from this investigation are summarized as follows:

1. Gas at an input rating as high as 2,700,000 B.t.u. per hour per cubic foot of combustion space was completely consumed in a water-wall furnace without any indication of a limiting condition being approached.

2. At input rates below 1,200,000 B.t.u. per hour per cubic foot of combustion space, the flue gas temperatures of each of the water-wall furnaces were considerably lower than those of the comparable refractory-wall furnaces. At inputs in excess of this amount, very little difference was found between the flue gas temperatures of the two types of furnaces.

3. The amount of excess oxygen required to secure complete combustion was greater in the case of the refractory-wall furnaces than with corresponding water-wall furnaces, the relationship being somewhat similar to that obtained for flue gas temperatures.

4. The relationship between the amount of excess oxygen required for complete combustion and the flue gas temperatures was found to be the same for all of the furnaces investigated.

A second bulletin, Report No. 748, describes additional tests on 10 furnaces, resulting in considerable original information concerning a large number of variables influencing the operating temperatures and combustion of industrial

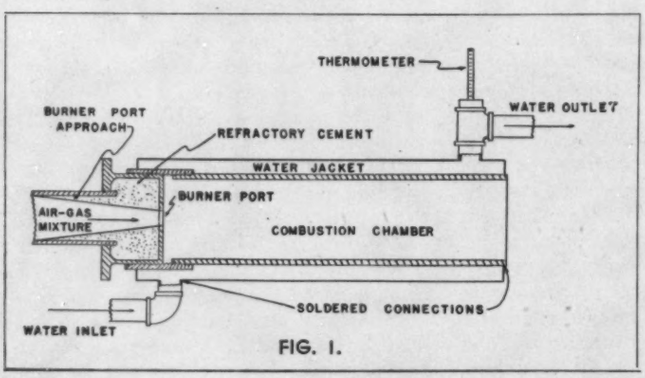


FIG. 1.

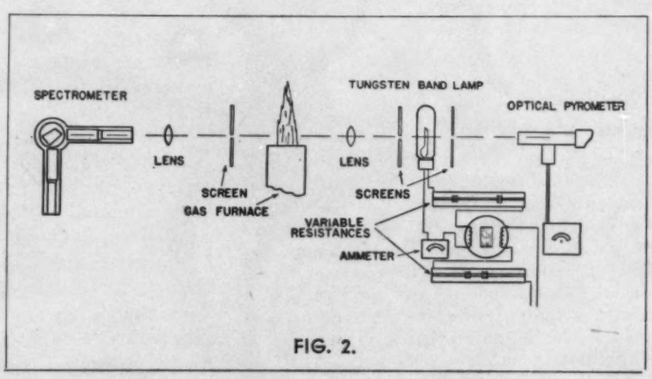


FIG. 2.

AFTER 5 YEARS . . . WITH OVER 30,000 CONTROLS IN USE

Only .2 of 1%

RETURNED FOR SERVICE

Out of 30,000 Minneapolis-Honeywell Controls in use more than 5 years on 14,000 house heating installations of the Kansas City Gas Company, it was necessary to return only .2 of 1 percent for service at a total cost of $244. In addition, the company spent but $158 for small parts repairs in 1934 . . . This remarkable record, established by the highly competent Kansas City Gas Company service department, indicates not only the exceptional performance and durability built into Minneapolis-Honeywell controls, but also emphasizes the importance of service departments trained by Minneapolis-Honeywell so that they are capable of servicing controls without factory assistance . . . The Kansas City Gas Company service record is but one of similar cases throughout the country. Your own service department can do likewise. Minneapolis-Honeywell Regulator Co., 401 E. 28th Street, Minneapolis, Minn.

NATIONWIDE SERVICE

Schooling gas company service departments is one of the important and exclusive functions of our own service organization, which maintains branch offices in all principal cities. Our engineers are available for consultation on any problem pertaining to heating and air conditioning, without cost or obligation.

1885 50 YEARS 1935 of AUTOMATIC CONTROL PROGRESS MINNEAPOLIS HONEYWELL REGULATOR CO.

MINNEAPOLIS HONEYWELL

Control Systems

BROWN INSTRUMENTS FOR INDICATING, RECORDING AND CONTROLLING

gas. The data presented include the following:

Turbulent burners, as compared to streamline design, yield higher flue gas temperatures, require more excess oxygen, and permit complete combustion of greater quantities of gas.

As the port size was reduced, maintaining the same input rates per unit of combustion space, the amounts of excess oxygen required, and flue gas temperatures, became less.

Nozzle mixing burners produced higher flue gas temperatures and required more excess oxygen than did premixing burners.

As combustion air temperature was raised the amount of gas completely burned per cubic foot of combustion space increased.

At equal input rates per cubic foot of combustion space, no effect was exerted on either the relation between flue gas temperatures and excess oxygen requirements, or the amount of gas which could be completely burned when changes were made in combustion chamber shape, length and cross-sectional area.

Harry L. Masser Now Assistant General Manager for L. A. G. and E.

HARRY L. MASSER, who since 1928 has been vice-president and executive engineer for the Los Angeles Gas and Electric Corp., became assistant general manager on June 1, and will have general supervision over the operations of the company in his new capacity.

Harry L. Masser

Mr. Masser came to L. A. G. and E. in 1924 as gas engineer, receiving his appointment as vice-president and executive engineer in 1928. Prior to his connection with the gas company he served the California Railroad Commission, from 1919 to 1924, as gas engineer and gas administrator. He has filled an active place in the western gas industry for many years, being chairman of the Pacific Coast Gas Association's Technical Section in 1928, and president of the P.C.G.A. in 1933.

Roper Prepares "Year 'Round Vacation Sale" Program

A summer and fall gas range campaign conducted by the Geo. D. Roper Corp. of Rockford, Ill., under the name of a "Year 'Round Vacation Sale" has been announced by the range manufacturer. The campaign will talk in terms of leisure hours made possible by use of modern ranges, and is built in three units—a newspaper campaign for local insertion, a colorful consumer broadside to tie in with the advertising, and a new window display to carry out the campaign theme and increase floor traffic. Copy appeal has been fashioned in line with the findings of a recent Women's Home Companion survey of women's preferences in leisure activities, and will stress such angles as motoring, sports, and leisure for time with the children and for beauty care.

September, 1930, Issue of "Western Gas" Needed

Western Gas will pay $1.00 each for two copies of the September, 1930, issue. Readers having available copies of this number will kindly notify *Western Gas* at 810 South Spring St., Los Angeles, Calif., before mailing them.

Rental Offer Puts Water Heaters on Chicago Gas Lines

The current water heating campaign in Chicago, being carried on cooperatively by Peoples Gas Light and Coke Co. and neighborhood plumbers is exceeding all expectations. In April above 600 water heaters were sold, and May brought 800 additional sales.

Peoples Gas is providing sales promotion plans, window display materials and advertising cooperation, and its employees are turning in selected prospects, for which they are paid commissions when sales result. Indicating the preferred type of prospects secured, 1,339 names were turned in up to May 17, of which 501, or 37.42 per cent, have already been sold and installed. Liberal rental terms are offered in the campaign, the low monthly rentals applying on purchase price should the renter decide to buy the equipment.

C. H. Light, manager of water heating sales for the company, has sponsored the cooperative campaign.

P. G. and E. Annual Summer Heating Campaign in Full Swing

The annual summer gas heating campaign of the Pacific Gas and Electric Co., San Francisco, Calif., began in June and is continuing through July and August. As a special inducement to consumers during the three-month period the company, in addition to financing on F. H. A. terms through a leading San Francisco bank, is asking no down payments and is deferring monthly payments until October 1 dating. The campaign applies to all gas heating equipment except circulating heaters, and is being conducted in cooperation with local appliance dealers.

Water Heater Rentals Successful On Gas Service Co. Properties

New business departments of The Gas Service Co., Kansas City, Mo., report 3,191 automatic storage water heater rentals to customers since inauguration of a rental sales plan March 1. A quota of 5,810 water heaters in 1935 for all properties of the company, representing 4 times the number added to the company's system in 1934, was set by F. M. Rosenkrans, new business manager of The Gas Service Co. Cash sales and those sold on the company's partial payment plan numbered 509 as of May 31.

Electrolux Schools Conducted for Los Angeles Gas Users

ELECTROLUX "schools" (summer editions of the Modern School of Gas Cookery) were originated and set in motion by Victoria Warner, home service director of the Los Angeles Gas and Electric Corp. the first week in June.

This unique "summer school" conducted by Florence J. Windecker, home economist, offers morning, afternoon and evening classes (the latter to accommodate husbands and business women) once a month in the auditoriums of the company's district offices. Admittance is by invitation.

The stage is set for action when guests arrive: A "No. 7" and a "No. 5" Electrolux stand side by side, back center. Lower panels dramatically open to give a glimpse of the soft silent gas torch at work. Beautiful gas ranges stand to right and left with a slim-lined gas water-heater playing its role backstage. An enlarged color chart of an Electrolux interior rests on an easel in full view of the audience, graphically illustrating correct food placement.

Miss Windecker plans her programs to cover every phase of Electrolux usage from surprise cold dishes to storage of prepared biscuit flour. Instructions are given for defrosting and cleaning. Information relating to cost of operation, and suggestions for care of the box during a month's vacation are furnished. Not a trick is missed.

Every guest receives a sheet of recipes which have been carefully tested. Also everyone is served with a taste of lemonade made from lemon ice cubes, refrigerator cake, strawberry jam mousse, and biscuits made from the prepared flour that has been stored in the Electrolux for days.

The schools are proving successful and definitely "sellers" for more Electrolux.

Lone Star to Construct 110-Mile Long Lake to Irving Line

The Lone Star Gas Co. in August expects to begin construction of a new 110-mile 20-inch pipe line from Long Lake and Cayuga gas fields in Anderson County to Irving, a few miles west of Dallas. Cost of the new line is estimated at $2,250,000 and it will have a maximum daily capacity of 110,000,000 cubic feet. The new line will increase reserve supply against peak demand more than 33 per cent for Dallas, Forth Worth and other cities on the Lone Star gas system.

This is the largest construction job undertaken by the company since 1929 and is the second major construction program this fiscal year. A 75-mile 12-inch pipe line was laid by the company near Waco last fall. Survey of the route of the new line has been started and is approximately 45 per cent complete.

T. B. Gregory Elected President Lone Star Board of Directors

T. B. Gregory, vice-president of the Lone Star Gas Corp., and pioneer in the gas industry, was recently elected president of the board of directors, succeeding the late George W. Crawford.

Mr. Gregory is a native of Emlenton, Pa., and for 50 years was a business associate of George W. Crawford and Harry J. Crawford, the three having merged properties and interests early in their careers.

IF YOU SHOULD BUY LIKE

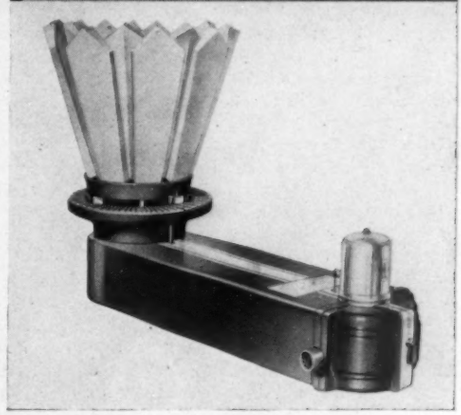
● When buying conversion burners, you would get many good features regardless of the burner you might "draw".

However, if you were fortunate enough to draw JANITROL you would get a burner that gives all the advantages to be found in any other burner *plus 10 exclusive features* not to be found in any other.

Fortunately, you don't have to buy conversion burners out of a hat. Logically you will select JANITROL.

READ ABOUT THESE EXCLUSIVE FEATURES!

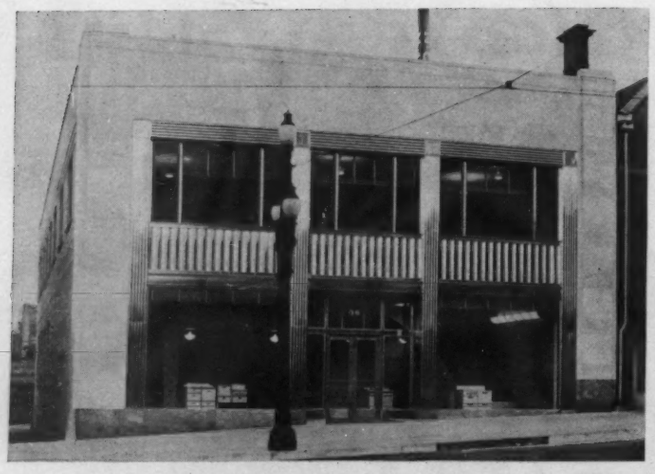
1. Complete, tamperproof enclosure of *all* controls—plus compact, attractive appearance.
2. Positive acting, *fool-proof* electrical pilot ignition assures safe customer operation.
3. An Automatic Pilot that is *safe*—operates in seconds (not minutes), a necessity when using the new sensitive room thermostats.
4. Automatic Pilot actuated by pilot flame *only*—not affected by surrounding temperatures in ash pit. Timing always constant.
5. Pilot *supply line* and *orifice* is easily removable for cleaning outside of furnace—*without* removing pilot assembly or disturbing timing adjustment.
6. The most complete line. There are 10 different types and 36 sizes of standard JANITROLS, permitting the selection of the correct unit for any type of boiler or furnace.
7. Patented baffles lean against firepot walls and overlap each other, insuring maximum radiating effect and positive scrubbing action of gases against firepot walls. The overlapping feature also permits maximum baffle flexibility, and *correct* application in firepots.
8. One common, integral control unit between gas inlet and gas orifices. Easily removed or installed as a complete assembly.
9. Complete factory assembled, wired and tested—easily installed with minimum labor.
10. Removal of end enclosure permits making all air and gas adjustments. Adjustments can be made quickly and without *uncontrolled air effecting combustion* while adjustments are being made.

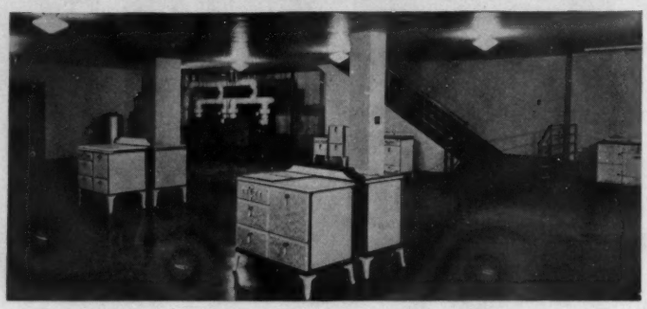


Surface Combustion Corporation

TOLEDO, OHIO

Sales and Engineering Service in Principal Cities





Four views of Mountain Fuel Supply Co.'s new home in Salt Lake City. (Upper left): Building exterior. (Upper right): General accounting and commercial departments. (Lower left): Display sales room, service counter and cashiers' cages. (Lower right): Appliance display room in basement of building; note central heating equipment in background.

Mountain Fuel Supply's New Headquarters

THE Mountain Fuel Supply Co. has recently completed a new office building in Salt Lake City, to house the general offices and retail sales department. The Mountain Fuel Supply Co. resulted from the consolidation of the various distribution pipe line and producing properties in Western Wyoming, and Utah, which were owned or controlled by Western Public Service Corp.

The new office building embodies up-to-date ideas in office building design and construction. It is a two-story building with a full basement and a frontage of 55 feet and a depth of 125 feet. Due to the size of the lot it was possible to reserve room on the south side for a private alley giving access to a private parking space in the rear of the building. There is also a light-well on the north side of the building extending back from a mid point of the building, so that all of the office space of the building has light and ventilation on three sides.

The two story and basement construction provided a total floor space of 18,700 square feet. The basement contains a merchandise display room, ladies rest room, men's and women's lavatories, various supply rooms for stationery, etc. The front part of the ground floor is devoted to a display sales room, service counter and cashiers' cages. In the rear of the cashiers' cages are the general accounting and commercial departments. By housing these two departments in one large room considerable time is saved in communication between departments and the efficiency of both departments is thereby increased. The second floor contains the executive offices, sales department and spare office space for future expansion. Fire proof vaults are located on all three floors for the use of storage and records. The building is strictly fire proof throughout, the only wood material in the entire building being the doors and door casings.

Executive offices are finished in acoustic plaster which reduces noise to a remarkable degree. The ceiling of the sales lobby and the accounting department is treated with acoustic-celotex which gives the same effect as the acoustic plaster, but permits the walls to be finished in washable paint.

The front of the building is constructed of Montana travertin of an ivory color with base of Italian marble and trimmed with stainless steel. The plate glass windows are the largest single pieces in Salt Lake City. Venetian blinds are used instead of shades or awnings on the front and rear of the building, and to date have performed more satisfactorily than either. The building is equipped with a ventilating system which can be converted to air conditioning and has a capacity of approximately four air changes per hour. All floors with the exception of the sales lobby are covered with battle ship linoleum (the sales lobby being of rubber tiling) in a dark brown color which matches the service and cashiers' counters. These counters are constructed of walnut and stainless steel ornamental trim.

The building of course is heated with gas, using two Mueller sectional cast iron boilers which are located in the corner of the basement display room. The installation of these boilers follows standard construction and will be used as a demonstration unit. All radiation in the building is of the finned type set in recessed boxes in the walls. Vacuum system of heating is used. Attic space is insulated against heat losses in the winter and heat infiltration in the summer. Steel ventilated type windows are used throughout.

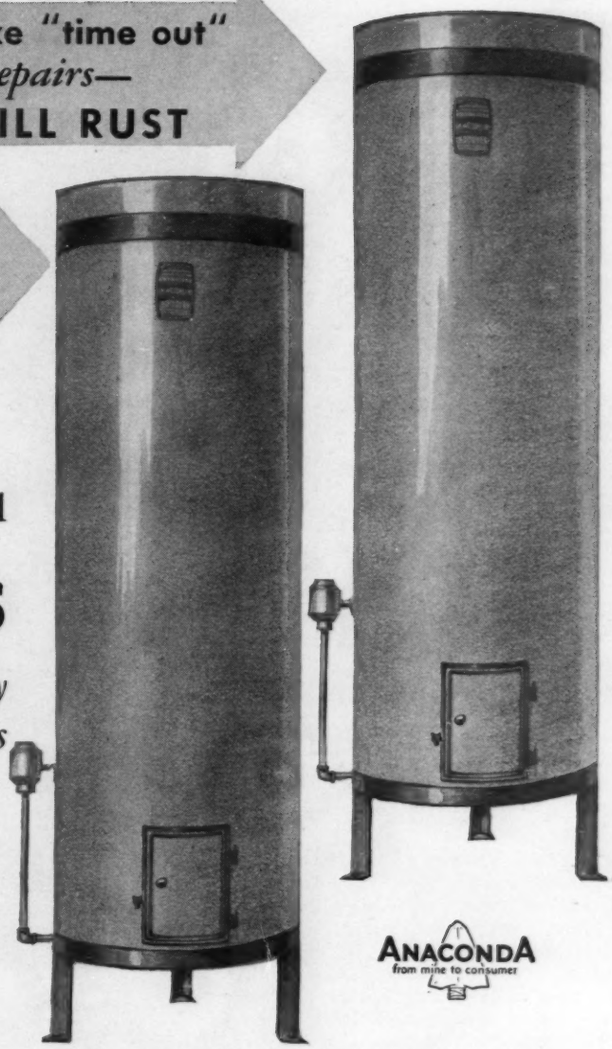
Construction began on January 26, 1935, and the building was occupied May 6, 1935.

F. M. Millington Named Manager of Iron Mountain Gas Co.

F. M. Millington, formerly industrial gas engineer of the Wisconsin Public Service Corp., of Green Bay, Wis., has been named manager of the Iron Mountain (Mich.) Gas Co., to succeed J. F. Weideman, manager for the past four years. Mr. Millington graduated from the University of Wisconsin in 1923 and entered the employ of the Wisconsin Public Service Corp., where he remained until his present appointment.

This heater will take "time out"
for wasteful repairs—
THE TANK WILL RUST

This heater will keep the meter working every day
THE TANK IS EVERDUR



Rustless as Copper, Strong as Steel

Everdur Tanks

provide better, longer, more satisfactory service—with no time out for rust repairs

BECAUSE *steady* consumption of gas is important... and because servicing always costs money and often destroys good-will . . . many gas companies are pushing the sale of water heaters equipped with tanks of strong, rustless Everdur. For tanks that rust are the chief cause of water heater troubles . . . discolored water, clogged outlets, inefficient operation, or complete tank failure.

Everdur Metal cannot *rust!*

Everdur is copper... the traditional non-rust metal . . . specially alloyed to provide the strength and welding properties of steel. Since Everdur is immune to rust, yet possesses these superior physical advantages, leading makers of automatic heaters and range boilers have standardized on Everdur for rust-proof tanks.

In considering the best interests of your customers . . . and of your company as well . . . we suggest a thoughtful consideration of the advantages of advocating the sale of heaters with Everdur Tanks.

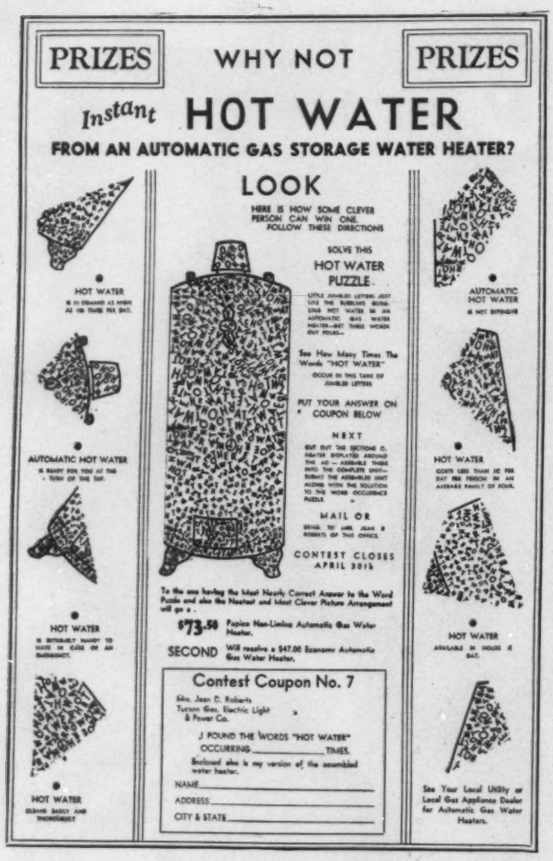
THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut
Offices and Agencies in Principal Cities
In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

EVERDUR METAL *for* TANKS

Tucson Contest Builds Interest in Automatic Water Heating

By A. R. SEAMAN

The Tucson Gas, Electric Light & Power Company


PRIZES
WHY NOT
PRIZES
Instant HOT WATER
FROM AN AUTOMATIC GAS STORAGE WATER HEATER?
LOOK
HERE IS HOW SOME CLEVER PERSON CAN WIN ONE. FOLLOW THESE DIRECTIONS
SOLVE THIS HOT WATER PUZZLE
See How Many Times The Words "HOT WATER" OCCUR IN THIS TANK OF JUMBLED LETTERS
PUT YOUR ANSWER ON COUPON BELOW
NEXT
MAIL OR
CONTEST CLOSES APRIL 30th
$73.50 Papco Non-Liming Automatic Gas Water Heater.
SECOND Will receive a $47.00 Economy Automatic Gas Water Heater.
Contest Coupon No. 7
I FOUND THE WORDS "HOT WATER" OCCURRING _____ TIMES.
NAME _____
ADDRESS _____
CITY & STATE _____
HOT WATER
AUTOMATIC HOT WATER
See Your Local Utility or Local Gas Appliance Dealer for Automatic Gas Water Heaters.

THE writer recently was called upon to design a campaign to promote the sale of the automatic storage gas water heaters.

A preliminary analysis of the situation in this locality was made, which showed:

1. That the automatic storage gas water heater was an appliance relatively unknown to this community (Tucson, Arizona).

2. That due to mild climatic conditions, many inadequate methods of water heating were found, including the old-fashioned tea kettle, furnace and stove coils, and the antiquated side-arm heater, the latter being in the majority.

3. That the water in this community was very hard due to chemical composition of the soil, and caused the water heating appliances to "lime-up" in a very short time.

4. That there existed a large potential field for the sale of this type of gas appliance.

5. That natural gas, a new fuel here, was now available to the public at a much reduced rate cost.

In consideration of the local water condition a "non-liming" gas water heater was selected to be marketed.

The problem of merchandising was essentially that one of educating the public to the use of automatic storage water heaters. The public must be taught sound facts regarding this appliance, not only from the standpoint of the cost and the features of construction but also educational facts regarding this appliance's *use* along with definite reasons for its being an integral part of any modern household.

In order to stimulate "hot water mindedness" in this community, the writer's idea was to design a contest which would serve as an intangible salesman—a contest which would cause a person to think, see, and talk "hot water" while in the mood of play.

A teaser ad was run in the newspapers telling the public to watch the papers for further announcements. Then the opening ad was published in both papers (a morning and an evening daily). This ad was repeated three times during the period of the contest with slight word changes. Local radio broadcasts were also used to encourage interest in the contest. For the period of the contest educational ads were run in order to explain various uses and the many reasons for having automatic hot water in any present day home. With these various mediums the public soon took hold, and responses came pouring into our office. People began to talk about the contest and about "hot water". The interest gained momentum as the closing time of the contest neared. It was found that the contest did promote a better public understanding of an automatic gas water heater as well as promote a greater desire to own one.

As detailed on the newspaper advertisement reproduced above, rules of the contest required first, that the entrant unjumble the letters in the tank and ascertain how many times the words "hot water" occurred, and that the letters not be used more times than the minimum times necessary to form the words. Second, after having determined the word occurrence the contestant was to cut out the sections surrounding the ad, piece them together and assemble them in a neat and original way. This along with the most nearly correct word occurrence would determine the winner of the contest. The coupon must be filled out with the individual's name, address, and final solution and mailed or brought to our local office.

The contest is not hard nor is it extremely easy. Results show, in the opinion of those who have worked it, that it does hold one's interest through to its complete solution. The coupon, the writer feels, may serve a double purpose. Primarily it was to satisfy a personel desire to find the natural scope of our local newspapers. The coupons after the first run carried numbers to facilitate determining from which paper the greater response was obtained. Secondly, it was decided that these coupons would be used as prospect slips for the salesmen. At intervals, names from them will be given a salesman to contact and continue promoting the automatic gas water heater idea into an ultimate sale.

W. Va. Practice and Procedure Rules Amended by Commission

The Public Service Commission of West Virginia will shortly print a revision of its Rules of Practice and Procedure and also its Rules and Regulations for the Government of the Construction and Filing of Tariffs of Public Utilities and Common Carriers.

The revision of rules was made necessary by the passage of house bill No. 473 by the last session of the legislature, which became effective June 6, 1935. This act increases the power and authority of the Public Service Commission in several respects.

B. C. Elec. Railway Co. Again Sponsoring Summer Open-Air Concerts

W. G. Murrin, president of the B. C. Electric Railway Co., Vancouver, B.C., has announced that the company will again this summer sponsor a series of fortnightly open-air Sunday concerts from July to September. The concerts will be under the direction of Allard de Ridder and are a continuation of the B. C. Electric Symphony broadcast which the company has sponsored over Station CRCV the past winter. The B. C. Electric Symphony orchestra is composed of selected members of the Vancouver Symphony orchestra.

G. J. Zorn Appointed V-President American Light & Traction Co.

G. J. Zorn, secretary-treasurer of the Muskegon (Mich.) Gas Co., has been appointed vice-president of the American Light & Traction Co., succeeding James Lawrence. The Michigan utility is a subsidiary of American Light & Traction Co.

New Manager at Henryetta, Okla.

A. H. Burgess has been made manager of the Henryetta, Okla., office of the Central States Power and Light Corp., headquartering at Dubuque, Iowa. Mr. Burgess succeeds M. P. Donahue, who has been transferred to Tulsa, Oklahoma headquarters of the company.

First Aid School For Employees

A first aid school for employees of the Council Bluffs (Ark.) Gas Co. began in May. Classes are held one evening a week, with Louis W. Jacobs and Bernard A. Klein, company employees, instructing.

TYPICAL OF TODAY'S STYLE TREND

MAGIC CHEF

SERIES 1400

NOT since Magic Chef was first launched has any model stirred gas range buyers like Series 1400. From all sections of the country reports are coming in of the extreme popularity of this attractive series. The reason for its unusual sales appeal is that Series 1400 perfectly typifies the style trend of today. • At the same time, it is a thoroughly workmanlike and efficient embodiment of all the advanced and approved features that constitute a thoroughly modern cooking appliance. • Not only is Series 1400 a satisfactory sales-compelling unit in itself, but it strengthens the whole Magic Chef line in its position of leadership in the gas range field. Write for details.

LOOK FOR THE RED WHEEL WHEN YOU BUY A MAGIC CHEF

Magic Chef
AMERICAN STOVE COMPANY

AMERICAN STOVE COMPANY
World's Largest Manufacturer of Gas Ranges
BOSTON • NEW YORK • ATLANTA • CLEVELAND • CHICAGO
ST. LOUIS • PHILADELPHIA • SAN FRANCISCO • LOS ANGELES

13 Years of Home Service at Chicago

By CRAIG ESPY

Mid-Western Manager, Western Gas

THE Peoples Gas, Light and Coke Co., first large gas company to launch a program of home service, recently completed its 13th year of participation in this activity, which called for taking stock of the tangible results of the program.

During the 13 years 30 million copies of recipes for menus and dishes have been distributed, 300,000 radio listeners have written personal letters to the department, 350,000 have telephoned in for advice on cooking, 1,000,000 housewives have visited the offices of the department, 900,000 have attended lectures held under the direction of the organization and 300,000 have attended outside lectures and demonstrations.

The progress during the 13 years has chiefly centered around cooking demonstrations and radio table talks.

Afternoon demonstrations have been held five afternoons a week. The subject of baking has had two days of each week, except in the summer period when one program was given over to canning. Meal preparation has been taught two days with one of these being utilized for a certificate class. Twelve consecutive classes make up this course, with certificates being awarded to those attending nine classes out of 12. The fifth afternoon is utilized for party plans.

Special classes have been an important part in the program. Some of these have been devoted to company employees, others to special demonstrations, cooking schools sponsored by newspapers, Girl Scout Cook's badge classes, Y.M.C.A. and Boys' Club classes and camp cooking classes for men.

"Cooking for Two" demonstrations have been conducted Wednesday, Thursday and Friday noons from the main floor booth. A home service worker is always in attendance at this booth. Approximately 7,000 recipe sheets are given out daily from this center of interest.

Guest speakers have been brought in frequently for special conferences and have invariably attracted large crowds of women. A talk on "fish" by a government expert was particularly productive, as have been the appearances of actresses, radio stars, talks by outside authorities on laundering and the proper care of wash fabrics, interior decorating and pictures, proper color combinations in dress, style shows, a series of talks on table setting and furnishing the table completely.

The eight branch offices of the company are also centers of home service activity. These departments as far as possible have become a part of the community life around them. They conduct the same course of instruction as that given in the main department except that during July and August the neighborhood services are closed.

Frequent Saturday morning classes are conducted for children and Scout organizations and evening classes for business women and mothers. Special certificate courses and series-lessons have been held for the evening groups.

Mrs. Anna J. Peterson cuts the birthday cake at recent anniversary of home service work in Peoples Gas Light and Coke Co.

Men's night programs have been developed with high success. A Community Night was a regular monthly feature in one of the services. Anniversary celebrations have provided a splendid opportunity for reaching new customers and for renewing contact with old.

The community services have made a special effort to demonstrate before clubs, preferring that the clubs come to the auditorium rather than conducting demonstrations in club rooms. Following demonstrations the auditorium is given over to club benefits, bridge and bunco parties.

Foreign mothers have also been reached by the neighborhood services. Where these mothers are too reluctant to come to the auditorium, special demonstrations are arranged in park field-houses.

Churches have also benefited from the home service activities. Preachers and leading church women have been invited to make use of the facilities which the neighborhood services provide. Recipes and purchase sheets for large quantity serving have been freely distributed and fudge and doughnuts have been contributed for church sales. In the case of direct contributions the stipulation has been that the food be displayed as coming from Home Service.

Radio Table Talks

The radio table talks began in December, 1922, and have been a constant part of the program ever since. These talks, dealing largely with menus and recipes, are broadcast four times a week. The average broadcast is for 15 minutes from 11:15 to 11:30 a.m.

Seasonal features such as sewing in Spring and Fall have had a place on the radio program. Radio certificate classes have become an almost annual affair. Members awarded certificates have to report that nine out of 12 lessons have been prepared. Special children's classes and talks for mothers are also a part of the program.

Fifty thousand radio recipe note books were given out one year upon requests received from listeners. Radio teas and radio club parties for children have always attracted wide attendance.

Schools and Parent-Teacher organizations have been an important source of contact. In one year 10 lectures were given before high schools, two before grade schools and 26 before Parent-Teacher Associations. Nine Federated Clubs were addressed the same year, three lodges, 42 churches, 12 welfare groups, 20 department stores and newspapers and two national associations.

In advertising home service constant use has been made of the Gas Gazette, a monthly pamphlet going out to 800,000 customers with gas bills. Space on the gas bills is also devoted to announcements. Colored recipe cards and radio recipe booklets have been given out.

Program folders have been used to announce seasonal variations in the program. Twenty-five thousand canning bulletins are given out each season. Fifteen thousand budget booklets were distributed one year. One hundred thousand copies of "52 Sunday Dinners with Anna J. Peterson" were distributed in less than six months.

Considerable newspaper publicity in both metropolitan and community newspapers has been secured. One year the department edited a column in a downtown paper. Another year a radio talk on "Left-Overs" and a one-column household article were a weekly feature in another paper. Still another column on "Better Cooking" appeared daily in one of the evening papers. Recipes have also been translated for foreign language papers.

Window displays have played an important part also. Seasonal foods with attractive suggestions for table decorations have a place in the permanent displays utilized by Home Service.

From its very beginning in the Peoples Gas Light and Coke Co., home service has had the capable services of Mrs. Anna J. Peterson, widely known throughout the gas industry, as department director. The home service program comes under the executive supervision of Paul D. Warren, assistant to Theodore V. Purcell, who is vice-president in charge of sales for the Peoples company.

Santa Maria Gas Co. Reports Increase in Earnings

The Santa Maria (Calif.) Gas Co., reports an increase of $16,000 in earnings for the 12 months ending March 31, 1935, over the previous 12 months. Total earnings were given as $76,091, compared with $60,091 in the preceding year, and total revenues were $523,746 compared with $472,329 for the past year.

FOR BETTER BUSINESS

All Summer Long!

DETROIT JEWEL GAS RANGES

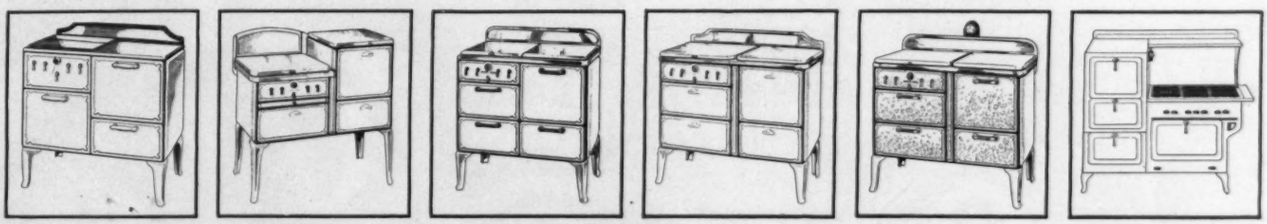
Garland Gas Ranges

The answer to the secret of consistent sales and satisfactory Summer volume HAS been discovered by hundreds of Gas Companies all over the country, many of which, for over a quarter of a century, have sold Detroit Jewel Gas Ranges and Garland Gas Ranges.

Experience has proven to those companies that superior merchandise is always in demand . . . and that quality at a price will always lure more business and produce bigger profits than just bare low-price appeal.

Our complete and comprehensive line affords a wide selection of models to fit your trade's preferences. Display these beautiful Detroit Jewel and Garland models and SEND YOUR SUMMER SALES CURVE . . . UP!

1. Summer Promotional Number.
2. Console Model.
3. Junior Table Model.
4. Senior Table Model.
5. Senior Table Model with Clock.
6. Six Burner with Double Oven.



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Detroit Jewel and Garland Gas Ranges Are Products of the

DETROIT-MICHIGAN STOVE CO.

Detroit, Michigan

Lone Star to Store Surplus Casinghead Gas

LONE STAR Gas Co. has entered a program to store surplus casinghead gas in the partially depleted Cheaney field.

Casinghead plants which have been unable to find a market for excess residue gas during the summer slump will have the surplus taken into the Lone Star main pipe lines and a like quantity taken out at the Cheaney field in Eastland County where it is compressed sufficiently above well pressure to force it to flow down the wells and into the gas sands where it will remain in storage until cold weather increases the demand.

The Lone Star system has made pipe lines, compressor stations, and underground storage facilities available to casinghead plants in Stephen, Eastland, Shakelford, and Young Counties, and the project is meeting with enthusiastic cooperation on the part of plant owners, producers, and royalty owners who see in it a market opening up for gas which, during summer months, would otherwise be wasted.

Only after careful experimentation was the project announced and put into effect. Frank L. Chase, vice-president and operating manager of the company, known throughout the oil and gas industry for his determined efforts to conserve natural gas resources in the Texas panhandle, is supervising the program, assisted by J. Harold Dunn, chief production engineer.

Storage capacity in the Cheaney reservoir is believed limited and no gas will be stored that can be absorbed by the market under present conditions. The program is one entirely of conservation, designed to benefit producers and royalty owners interested in casinghead gas. Lone Star hopes to justify expenses of the project so that the program may be carried out as a regular operation feature.

Facilities made available by the company have a daily capacity of 10 million cubic feet, and the total storage capacity of the Cheaney reservoir with present facilities is approximately 2 billion cubic feet. Slightly more than 15 billion cubic feet of gas has been produced from the Cheaney field prior to storage operations, bringing the reservoir to a stage of depletion that approached abandonment. Original well head gauge pressure was 1,230 pounds but had dropped to 140 pounds.

It is estimated that approximately 5 million feet of gas were being taken into more than eight intake wells daily in the Cheaney field the latter part of June.

General Utility Man Available

A general utility man, age 36, with 10 years experience in all branches of gas distribution, including meter and regulator repairing, is seeking a connection. He is prepared to locate anywhere in the United States, and offers references. *Western Gas* will be glad to forward any inquiries to the applicant.

Key Co. Opens Western Factory Branch in Los Angeles

The Key Co., formerly the Key Boiler Equipment Co., East St. Louis, Ill., opened a factory branch in Los Angeles, Calif., effective June 1. Office and warehouse, located at 1725 East 7th St., will be under the direction of E. A. Key, assisted by J. O. Wiley, formerly with the Paramount Manufacturing Co., and B. J. Gross, who comes from the main factory in East St. Louis, where he was in charge of tool sales for the company.

The Key Co. manufactures headers for cracking stills, boiler hand-hole plates and caps, and numerous boiler maker tool specialties. An established product manufactured by the company for the gas industry is pipe sealing compounds. All Key Co. products will be distributed in the 11 western states by the new factory branch.

Dallas Windows Devoted to Special Industrial Subjects

The Dallas Gas Co. is featuring a special window display arrangement in which all industries in Dallas using natural gas will participate. The space selected is a front window in which is an industrial poster background. On this is the wording, "Natural gas is used by 209 Dallas industries." Each industry will be given a two weeks period in which to display some particular feature of its products. Animated windows are not infrequent and one milling company improvised a mechanical arrangement which controlled a small doll dressed up as a "negro mammy" who pushed a rolling pin back and forth over a bread board in front of her. Small sacks of flour furnished background and atmosphere. Even candy and biscuit companies, as well as a Ford plant parts display, arranged attractive displays in the industrial window.

C. W. Daniels, Gen. Sales Mgr. For Harnischfeger Corp.

The Harnischfeger Corp. of Milwaukee, Wis., has appointed Charles W. Daniels as general sales manager for the company's line of P&H contractors' equipment, industrial products, arc welders, hoists, and brewery equipment.

Mr. Daniels has been connected with Harnischfeger for many years in various capacities, both in New York and Philadelphia, where he was in charge of the corporation's office. L. M. Stout has been appointed district manager for the Philadelphia territory to succeed Mr. Daniels.

Longview, Tex., New Offices for United Gas Public Service Co.

The United Gas Public Service Co., Houston, Tex., on April 30 was formally installed in new quarters at Longview, Tex., on East Methvin St., with an open house. R. E. Knight is manager of the district. Appliance dealers participated in the event by displaying appliances in the company's lobby. The new location will house district offices of the distribution department, the pipe line and the industrial sales departments being located in the Glover-Crim Building.

The Goodman Stopper

The Reliable Shut-off for Street Mains

GOODMAN USED SINCE 1897 — 2" HANDLE & LOCKING SLEEVE — GAS MAIN STOPPER

Equipped with Improved Patented Locking Sleeve, which locks both handles to the pipe. Stopper cannot slip. Gas cannot pass.

Safety Gas Main Stopper Co.
523 Atlantic Avenue, Brooklyn, N. Y.

Pac. Coast Rep.: C. B. Babcock Co.
135 Bluxome Street
San Francisco, California

NRA MEMBER U.S. WE DO OUR PART

BUILD YOUR HOUSEHEATING LOAD WITH KLIXON CONTROLS

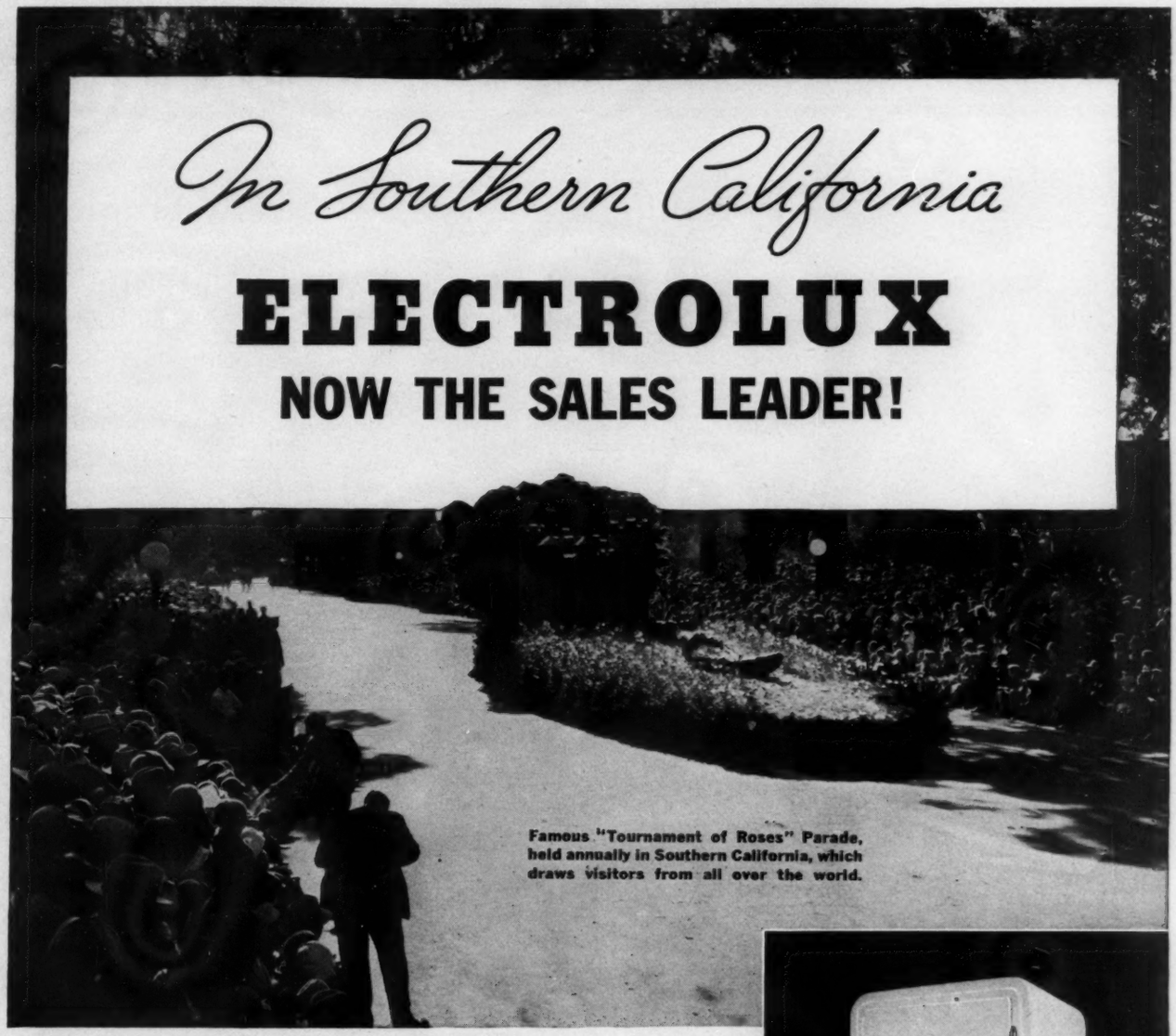
DIAPHRAGM *Room Thermostat*

These two advanced Klixon devices give exact automatic temperature control and assure positive pilot protection for your gas-fired space heaters . . . provide sales features that make it easy to sell gas heating.

Write today for descriptive bulletins.

PILOT *Safety valve*

SPENCER THERMOSTAT COMPANY
Unit of Metals & Controls Corporation
34 FOREST STREET • ATTLEBORO, MASSACHUSETTS


In Southern California
ELECTROLUX
NOW THE SALES LEADER!
Famous "Tournament of Roses" Parade, held annually in Southern California, which draws visitors from all over the world.

This year's gain in gas refrigeration sales even greater than that of last year—and 1934 broke all records!

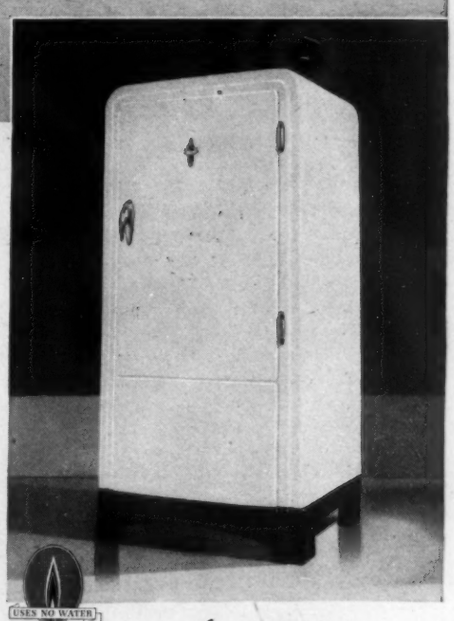
SOUTHERN California gas men *don't* fool! Already they've put Electrolux in leading place for refrigerator sales in their territory. And they're still going *full steam* ahead!

In practically every other section of the country, too, well-directed sales and merchandising effort is meeting with similar results! Gas refrigeration sales are increasing with leaps and bounds . . . achieving even greater increases than last year—and last year was a *record-breaking* year!

And there's every reason why the big buying trend to Electrolux should continue during the months ahead! With hotter weather coming, more families than ever will realize their need for modern refrigeration!

By maintaining your refrigeration activity undiminished through the next few months you can be sure of reaching these prospects at the psychological time with the story of Electrolux' greater beauty, economy and convenience.

For assistance in forming summer sales programs and advertising plans, write, wire or phone to Servel, Inc., Electrolux Refrigerator Sales Division, Evansville, Ind.



NEW *Air-Cooled*

ELECTROLUX

THE SERVEL *Gas* REFRIGERATOR

BUTANE-PROPANE NEWS

Troy distribution system going in—showing 2-inch Monoloy cast iron pipe laid over trench in 20-foot lengths, ready for gland packed rubber ring flexible joints to be made up.

Two Butane-Air Systems Near Completion at Troy and Andalusia, Alabama

TWO new butane-air gas systems are nearly ready to go into service, in Troy and Andalusia, Alabama. Both are being built by PWA funds for the municipalities. Troy is a town of about 7,000 population and Andalusia of 5,200, located in the agricultural section of south-central Alabama.

For the Troy system $70,400 was authorized in PWA funds, and $73,800 was allotted at Andalusia, 30 per cent of the amounts being outright grants for labor and materials. Revenue bonds were issued, in the case of Troy, to be amortized over a 15-year period.

In Troy it is expected to serve approximately 500 consumers within a year's time, and in Andalusia something over 400.

On both of the projects cast iron pipe is specified for distribution systems. Each length of pipe is required to withstand an internal hydrostatic pressure of 500 pounds per square inch, and all assembled pipe must withstand a minimum underwater test of 75 pounds per inch compressed air pressure. A dead-end 24-hour field test at 25 pounds air pressure is also called for, with no pressure drop.

The Troy system is designed for a normal operating pressure of 8 pounds, with provision for 80-pound maximum, and with individual house regulators. At Andalusia the distribution pressure will be from 5-10 pounds.

Cast iron pipe in 6-, 4-, 3-, and 2-inch sizes is going into these systems. On the Troy project the Monoloy MJ pipe supplied by American Cast Iron Pipe Co. of Birmingham, Ala., is equipped with mechanical joints employing Thiokol-ducktipped rubber gaskets. The 4- and 3-inch pipe was furnished in 16-foot lengths; 2-inch pipe was cast in 5-foot lengths and shipped in 20-foot sections with tapped and threaded intermediate joints. On the Andalusia job the 2-inch pipe was cast in 6-foot lengths and factory assembled in 24-foot sections with 2½-inch male and female threaded intermediate joints. As each 6-foot length has at least one tapping collar for making service connections, strap saddles are eliminated. Field joints will be mechanical screw gland with rubber gaskets. For the 3-inch pipe at Andalusia 12-foot lengths are used, and 16-foot lengths for the 6-inch.

Plant design is similar for both of the projects. At Troy provision is made for liquid storage and gas storage tanks, of welded construction, mounted on concrete piers with provision for temperature expansion. A 5,000-cubic foot low pressure compressor operating normally from 0 to 10 pounds gauge but suitable for emergency compression to 80 pounds is specified, and space is provided for an additional compressor unit. In addition there are two 1,000-cubic foot high pressure compressors normally operating from 0 to 80 pounds but available for low pressure service.

The plant buildings at both Troy and Andalusia are of brick construction. Dimensions are 20 by 34 feet at Troy, concrete flooring and asbestos roof being used, with a fire wall between control and compressor rooms. Full automatic control equipment is provided.

The Andalusia mixing plant will have a daily capacity of about 144,000 cubic feet. Cutler-Hammer calorimeter and control are used, and 530-B.t.u. gas will be served. Gas storage tank at Andalusia has capacity for 19 M c.f. at 80 pounds pressure.

Bids were received on both projects in December of last year; construction began at Troy in January, with A. U. Avera as engineer in charge. R. J. Reid Contracting Co. of Birmingham, Ala., was awarded the contract for installing the distribution system. Algernon Blair, contractor of Montgomery, Ala., received the contract for the Andalusia job. This system was designed by Charles A. McKeand & Associates, for which G. B. Sheppard is chief engineer, and this firm is supervising the construction.

Traveling Showroom Sells Philgas for Michigan Gases, Inc.

MICHIGAN Gases Inc., Grand Rapids, western Michigan distributor for Philgas, sends *Western Gas* some interesting details on the traveling showroom, which is proving successful in the company's bottled gas sales promotion work. The "salesroom on wheels" made a continuous schedule of showings at fairs last fall, and baking demonstrations also were held at important points in the company's territory.

The streamline trailer (illustrated above) is hauled by a standard Plymouth coupe, and is of welded steel construction. It weighs about 2900 pounds empty and about 5,000 pounds when fully equipped for the road. It is 7 feet 6 inches wide, 26 feet long, and contains over 6 feet of standing room within. All frame work is of oak.

The body is dark blue in color with a silver top. "Michigan Gases Inc.", in wood

letters coated with cadium by a metalizing process, appear on the sides of the trailer and add to the general modernistic effect. Stainless steel holders for poster signs are also installed on each side of the car.

The bottled gas service equipment is cleverly concealed in a compartment fitted into the nose of the trailer.

Two roomy seats convert into comfortable beds for the sales crew when needed. Compartments under the seats and two large closets in the rear of the trailer afford ample storage accommodations. Lighting is obtained from both 6-volt and 110-volt lighting systems.

A public address system using two loud speakers, supplemented by radio and phonographic auxiliaries, is a part of the equipment. An awning is spread from one side of the car during the demonstration period and collapsible steel chairs are carried along for use of the audience during the exhibition.

United Gas Corp. Buys Camas Properties of Natural Gas Corp.

The Camas, Wash., butane-air property of the Natural Gas Corp. of Washington has been purchased by the United Gas Corp., representing a group of Vancouver, Wash., and Portland, Ore., capitalists. The distribution system, which consists of more than 12 miles of pipe line, will be developed to extend service to Washougal, Weir Park and other communities adjacent to Camas.

Headquarters of the company have been established at 340 Beeson St., in the Vehrs Building, under the direction of John Shute of Portland, who has been made manager of the new company.

W. K. Perry, formerly with the Northwestern Electric Co. in Camas, has been placed in charge of sales promotion work. The company expects to engage in an intensive campaign to add domestic and commercial customers to the 130 consumers now being served.

Coast Counties Gas & Electric Lowers Rates Fourth Time in 18 Months

Another gas rate reduction, the fourth to be made since January 1, 1934, became effective on June 3 in territory served by the Coast Counties Gas and Electric Co., headquartering in Santa Cruz, Calif. The reduction represents an annual saving of $45,000 to both domestic and commercial consumers, and is in line with the company's policy to simplify its rate structure. The lowered rates give consumers the benefit of the domestic heating rate which was formerly available only on special application for domestic heating and refrigeration.

The reductions made are in addition to the "free gas" distributed during the months of February and March of this year, which campaign proved exceptionally popular with consumers, and beneficial from a load-building viewpoint.

Roper Display Service Will Stress Seasonal Appeal

The Geo. D. Roper Corp. of Rockford, Ill., announces a new quarterly display service carrying appropriate seasonal subject matter, and available to gas companies on a subscription basis. The first of the new display sets emphasizes summer and fall recreations made possible by time saved in using a modern gas range, and the three remaining sets will be distributed for winter holidays, early spring, and early summer.

Annual Short Course on Bottled Gas at Texas A. & M. College

A Short Course on bottled gas and its appliances to be held annually for senior agricultural engineering students at Texas Agricultural and Mechanical College, College Station, Texas, has been announced. The course will cover utilization of bottled gas in farm homes.

Elmwest Gas Corp. of N. Y. Buys Natural Gas Corp. of Wash. Plants

The Port Townsend, Port Angeles, and Anacortes plants of the Natural Gas Corp. of Washington were sold to the Elmwest Gas Corp. of New York on June 7. Headquarters for the three cities, to be established in Port Angeles, will be under the direction of R. L. Nance, vice-president and general manager of the company. E. M. Brickey will continue as resident manager of the Port Angeles plant.

An intensive sales campaign and appliance demonstration activity is planned, contingent upon approval of the company's petition before the Washington Department of Public Works to lower existing rates.

OUTNUMBERING THE FIELD

Hackney Liquefied Petroleum Gas Cylinders are twice as popular as all others combined.

In the liquefied petroleum gas field there are *two* Hackney cylinders in service to every one of *all others combined.*

Hackney cylinders are chosen by: Phillips, Skelly, Shell, Standard, and other leaders.

This popularity has been won by superior design and workmanship — made possible by the long experience and extensive manufacturing facilities of Pressed Steel Tank Company — builders of metal containers for the country's leading users.

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CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

KEROTEST
tested and proved
FORGED BRASS
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and FITTINGS
for
PROPANE
BOTTLED GAS
SERVICE

Write for descriptive circular

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KEROTEST

Propane Torch Standard Fire-fighting Equipment

A PROPANE gas torch has been officially adopted as standard equipment by the United States Forest Service, for back-firing counter-attacks on forest fires. The propane equipment, developed by the Standard Oil Co. of California, was submitted to a series of government tests and also demonstrated its all-around superiority in forest fire-fighting during the disastrous Idaho Selway National forest fire the summer of 1934.

The apparatus consists of a special small cylinder attached to a pack-frame, a copper tube that extends to the operator's belt, where a valve is located for quick control, a short length of ¼-inch hose, and a combined mixing-chamber and burner which creates a super-hot blowtorch type of flame. The entire outfit, including a 9½-pound filling of Calol cutting gas, weighs about 35 pounds.

The various units of the propane gas torch are assembled ready for use by the Forest Service. Small cylinders are filled from larger ones, and each outfit is boxed in a specially constructed case ready for shipment to the field. Supply cylinders are available in two sizes, one containing 41 pounds of gas and another 91 pounds. The smaller supply packs are used for horse transportation in rough country—the larger where trucks can operate. The back-pack cylinders are refilled on the job in from 3 to 5 minutes. A small set of spring scales is used in the field to weigh the gas. Cylinders are stamped by the Government Forest Service as to the tare, weight of the gas, and the total permissible weight of the pack.

4-Year Nat. Gas Engrg. Course Added to Texas College Curriculum

The Texas College of Arts and Industries, Kingsville, Texas, has announced inauguration of a 4-year course in natural gas engineering, effective with the 1935 fall semester.

Courses will cover production, transmission and distribution of natural gas, taking in chemistry of fuels, geology, measurement and uses of natural gas, and it is intended that the student will be provided opportunity to do research along many lines paralleling the problems arising in the natural gas industry. Several gas producing fields in the College vicinity will serve as experiment and observatory laboratories. It is planned to conduct a short course each year, during which problems of the natural gas industry may be presented for discussion.

Detailed information regarding the course may be had by addressing J. O. Loftin, president of the college, or R. L. Peurifoy, head of the division of engineering.

Visitation Prize New Angle In Sales Awards

SOUTHERN UNION GAS CO., Dallas, Texas, has inaugurated a unique "Vacation Fund and Get Acquainted Contest" effective June 1 and continuing until August 1. Points, earning 10 cents each, are being given for sale of certain gas appliances.

A new angle in contest awards, particularly appropriate for a gas system with far-flung properties, has been introduced in the visitation prize to be given to the high point employee in addition to his cash award per point. A 10-day leave with pay, aside from the employee's regular vacation period, transportation, and $50 expense allowance will go to the winner. Should the winner be located in the West Texas or New Mexico offices he will be given a trip to the Arkansas properties of the company; and if located in the South Texas district or the Arkansas district of the company he will be rewarded with a trip to the New Mexico properties.

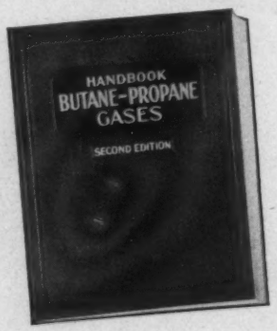
Ponca, Neb., to be on Natural Gas Service

The Nebraska Public Service Co. has been granted a franchise to serve natural gas to Ponca, Neb. Construction is already well under way and service is expected to begin by August 1. The distribution system will require approximately 21,000 feet of pipe line. Ponca, the county seat of Dixon County, is located 38 miles from Sioux City, Iowa, and has a population of 920. The town is at present without a railroad.

2-Month Range Drive Exceeds Quota 38 Per Cent

The sales department of the Iowa-Nebraska Light and Power Co. announces a total of 551 gas ranges sold during the company's 2-month range drive, 38 per cent above the quota set.

THE ONLY
HANDBOOK OF
BUTANE–
PROPANE
GASES



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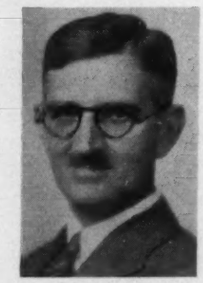
California Natural Gasoline Ass'n. Elects New Officers, 1935-1936

THE California Natural Gasoline Association has elected T. L. Taggart of the Standard Gasoline Co., president, and Harold R. Linhoff, of the Richfield Oil Co., vice-president, for the ensuing year. The new officers were initiated into office at the annual June Frolic held on the 8th of last month at the Sunset Canyon Country Club in Burbank.



T. L. Taggart

Mr. Taggart succeeds H. L. Eggleston of the Gilmore Oil Co., who has given the C.N.G.A. one of its most successful years. The new president is contract superintendent for the Standard Gasoline Co. Mr. Linhoff, vice-president, is manager of the Signal Hill Gasoline Co., a subsidiary of the Richfield Oil Co. of California.

Directors elected to serve for the ensuing two years to take the place of those whose terms are expiring are as follows:

H. L. Eggleston, Gilmore Oil Co.; L. L. Aubert, Norwalk Co.; A. H. Bradford, West Coast Refining Co.; F. E. Davie, Shell Oil Co.; R. W. Heath, Signal Oil Co.; E. J. Lange, Associated Oil Co.; H. E. Moulton, Chanslor Canfield Midway Oil Co.; R. S. Tulin, Shell Oil Co.; T. K. M. Smith, Industrial Fuel Supply Co.; John Rogers, Ingersoll-Rand Co.; R. C. Wheeler, General Petroleum Corp.; A. H. Bell, Continental Oil Co.; J. C. Burks, Field Gasoline Corp.; R. D. Gibbs, Union Oil Co.; W. Keck, Jr., Superior Oil Co.; A. E. Schiltz, Del Rey Gas & Oil Co.; W. D. Smith, Wilshire Oil Co.; W. M. Young, The Texas Co.; P. E. Fluor, Fluor Construction Co.

Wallace McIlhany enters his sixth year as secretary and treasurer of the California Natural Gasoline Association.

Panhandle-Wide Gas Well Tests Underway in Texas

A Texas Panhandle-wide test of gas wells to determine their open flow capacity and rock pressure began June 9, to secure data regarded as necessary in proper application of the Small gas legislation to this field. First work will be done from Pampa eastward, with 1,107 gas wells to be tested. Wells will be shut in for at least 72 hours before tests are made. V. E. Cottingham, chief petroleum engineer for the Texas Railroad Commission, is in charge of arrangements, and eight or more gas engineers will be used over an estimated 50-day period.

Las Cruces Municipal Plant Due

Construction on the Las Cruces (N. Mex.) municipal gas plant is scheduled to start within 60 days, according to Mayor J. Benson Newell. The plant will distribute natural gas supplied from the Jal field in New Mexico, through connection to the Western Gas Co.'s 12-inch line 10 miles west of Vado. A P. W. A. loan of $175,000 has been approved, of which $45,000 is an outright grant.

New Orleans Plan Encourages Dealer Advertising

DURING the past 8 months New Orleans Public Service Inc. has offered special encouragement to dealer appliance advertising, with the result that the volume of such advertising has practically doubled, according to E. N. Avegno who is heading the company's dealer sales division.

An advertising allowance is being offered to dealers by the company, based on current dealer sales accomplishments. In no case may this allowance exceed 50 per cent of a dealer's total advertising expenditure during any one month, and the allowance does not accumulate to the dealers' account if it is not used currently.

To become eligible for the allowance dealers furnish the utility company the names of appliance purchasers, and submit tear sheets of their advertising together with newspapers' advertising invoices.

On refrigerator sales, including gas refrigerators, the following schedule of advertising allowance applies: On units of 4 cubic foot capacity or less, $3; 4-7 cubic foot capacity, $4; above 7 cubic foot capacity, $5.

On gas water heaters a flat $3 allowance per heater sold is offered.

In earlier experience with cooperative advertising in New Orleans the company found that many dealers were prone to let the utility carry the load. The new plan makes it necessary for the dealer to sell before he benefits from the advertising allowance, and operation of the plan to date indicates the soundness of this basis.

Frank Moon Named Chairman Natural Gas Bureau, Los Angeles

Frank L. Moon, of Los Angeles Gas and Electric Corp., last month was elected chairman of the Natural Gas Bureau for the year ending June 30, 1936. Mr. Moon is replacing W. M. Jacobs of the Southern Counties Gas Co. The Bureau represents the sales departments of the three gas companies headquartering in Los Angeles, in joint activities.

Others representing the member companies are: Frank Weiss and C. A. Thorp for the Los Angeles Gas and Electric Corp.; Clyde H. Potter and C. L. Ferry for Southern Counties Gas Co.; and C. M. Grow, W. M. Jacobs, and J. E. Kern for the Southern California Gas Co.

Dallas Gas Co. Conducts Oldest Range Contest

The Dallas (Texas) Gas Co. during the month of April conducted a "Modernize Your Kitchen" campaign, during which modern gas ranges were awarded to consumers turning in the oldest gas ranges. The oldest range turned in was one which had been in use for 37 years, according to C. K. Patton, new business manager for the company.

Carload of Electrolux's Sold to Okla. Nat. Gas Co. Employees

Employees of the Oklahoma Natural Gas Co. at Okmulgee, Okla., in May purchased a carload of Electrolux refrigerators from the Okmulgee Furniture Co., the sales amounting to $7,200. The Oklahoma Natural Gas Co. does no appliance merchandising because of the Oklahoma law prohibiting sale of appliances by utility companies.

Consumer Folder Tells How to Economize on Gas Use

Southern Counties Gas Co. of California, recently published for consumer distribution an interesting folder entitled "At Your Service". The mailing piece contains among other helpful information instructions on how to compute the amount of gas bills and how to avoid wasteful use of gas.

Former Utility Ass'n Counsel Dies in Rio De Janeiro

Carl DeWitt Jackson, widely known public utility lawyer and former counsel for the national public utility associations, died suddenly in Rio de Janeiro on June 12. At the time of his death Mr. Jackson was special counsel for the Brazilian Traction Light and Power Co., Ltd., and had served in that capacity since February 1, 1934, when he retired as counsel for the American Gas Association. He was born in Evanston, Ill., in 1870 and was a graduate of Harvard University. He served as chairman of the Wisconsin Railroad Commission from 1917 to 1922 and was elected president of the National Association of Railroad and Utilities Commissioners in 1921. He was retained in 1923 as consulting counsel by the American Gas Association and National Electric Light Association and served in that capacity for several years, later becoming counsel for the Joint Committee of National Utility Associations in connection with the Federal Trade Commission investigation of the utility industry.

George B. Cortelyou Retires

George B. Cortelyou, president of the Consolidated Gas Co. of New York, resigned July 1 under terms of a recently adopted policy of the company to retire all employees and officers of the system at the age of 70.

Frank W. Smith, member of the board of directors, is succeeding Mr. Cortelyou. O. H. Fogg, who has carried the title of vice-president of the company, has been appointed executive vice-president.

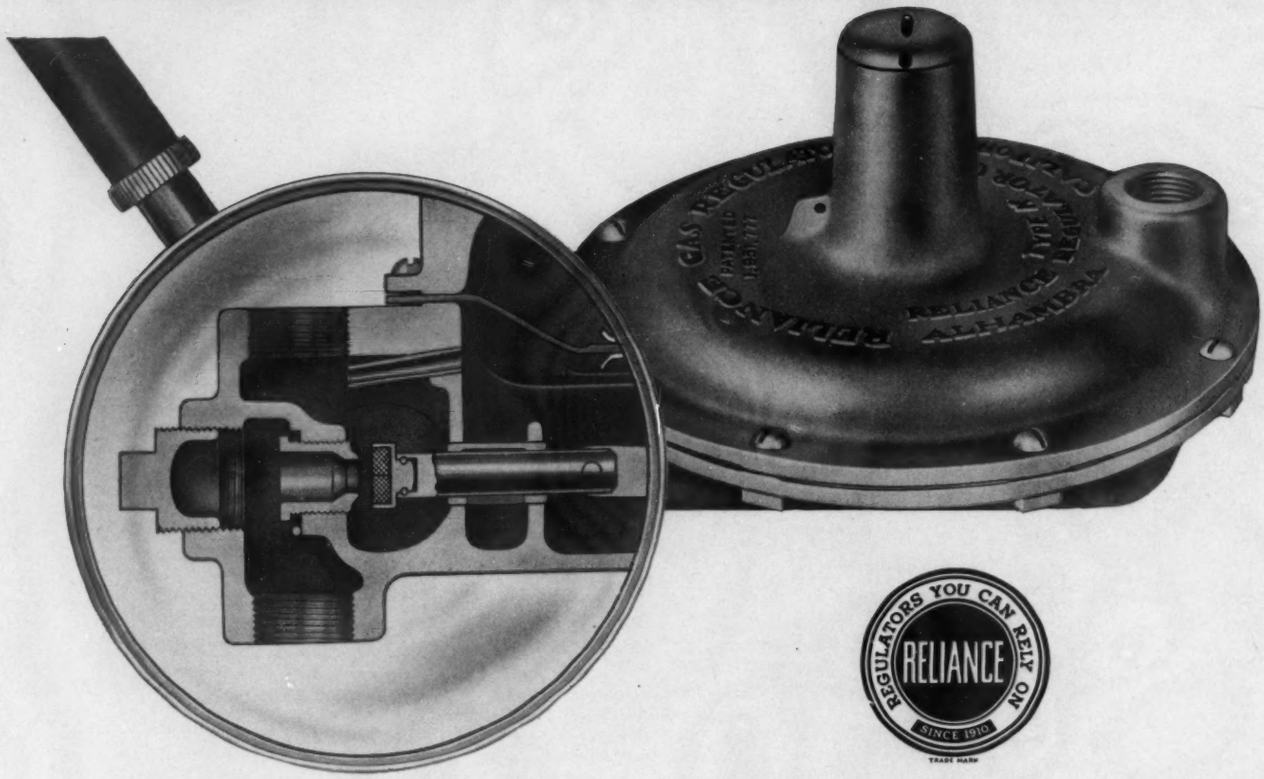
Fant Made Ass't. Commercial Mgr.

Clyde Fant, division sales manager of the East Texas Division of the Southwestern Gas and Electric Co., has been made assistant commercial manager at company headquarters in Shreveport, La. James B. Reeder will direct sales activities in the East Texas Division of the company.

New Manager at Wellington, Texas

Joe Ham, formerly of Childress, Texas, office of the Northern Texas Utilities Co., has been appointed as manager for the company's district at Wellington, succeeding Art Wells.

RELIANCE REGULATORS



REGULATORS YOU CAN RELY ON
RELIANCE
SINCE 1910
TRADE MARK

Positive Control of Gas Pressure

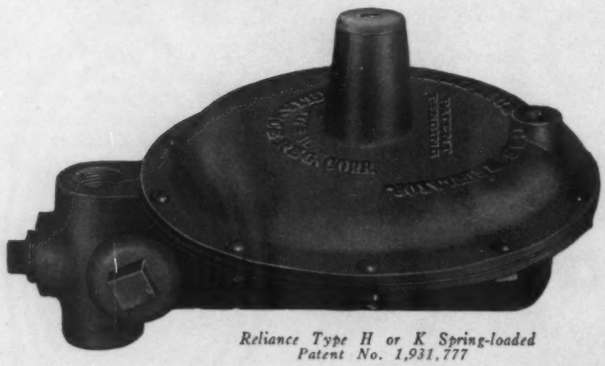
Types H and K Reliance Regulators (furnished in either spring-loaded or weight-loaded type to your specifications) will function accurately, efficiently and continuously over long periods of time with minimum of maintenance expense.

Four important service qualities are afforded by application of Reliance Regulators . . . (1) sensitive pressure regulation . . . (2) positive lock-up when consumption ceases . . . (3) minimum pressure loss in the regulator . . . (4) rugged construction.

Bulletins No. 27 and No. 31 explain in detail the design, construction and capacities of Types H and K Reliance Regulators. Write for your copies.

The Reliance organization also manufactures a complete line of district and domestic regulators. Copies of Illustrated Bulletins describing these regulators in detail are also available upon request.

RELIANCE REGULATOR CORP.
1000 Meridian Ave. • Alhambra, Calif.
Regulators for Manufactured, Natural and Butane Air Gases



Reliance Type H or K Spring-loaded
Patent No. 1,931,777

Reliance Type H or K Dead-weight

MEASUREMENT and CONTROL

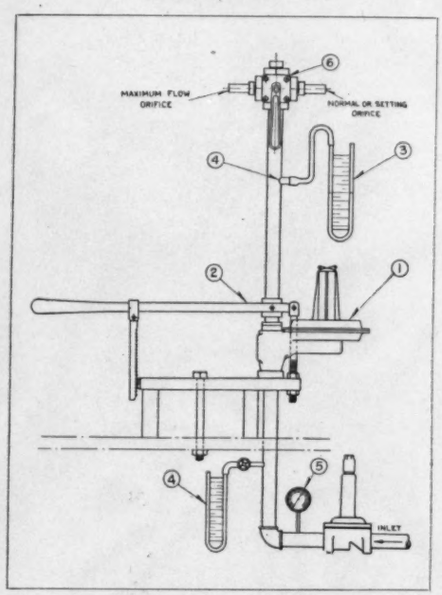


Fig. 1. Test Connection.

Service Regulator Testing

By ALLEN D. MACLEAN

*Chief Engineer, Pittsburgh Equitable Meter Company**

THE actual design of the service regulator has gone through a number of development stages and there has been evolved a fairly uniform and consistent piece of equipment. There appears to be, however, quite a lack of uniformity in the method of testing and servicing the service regulator in practice. Some of this discrepancy can be accounted for by the divergence in local conditions, such as the pressure in the high pressure lines, type of gas, etc. Some of it can be accounted for by variations in standards of pressure and safety in various companies. However, most of it is probably due to the fact no set standards or test method has been developed.

In addition to customers' service and safety, unaccounted-for gas occasioned by blowing safety seals or safety valves is a serious consideration. It is very probable that if due consideration were given these factors most gas companies using service regulators would develop a standard routine in checking and repairing this important piece of distribution equipment.

A service regulator must:

1. Maintain a uniform operating pressure at *all* appliances independent of the number of appliances in use.

2. Prevent the possibility of dangerous over-pressure on the domestic meters, the house piping or appliances.

3. Maintain as low as possible a metering pressure, and still give satisfactory pressure at appliances.

4. Be able to respond to quick changes in rate of flow occasioned by thermostatic valves, instantaneous water heaters, etc.

5. Maintain these characteristics over a long period of time in spite of changing inlet pressure and other variables.

The service man is confronted with the problem of just how much should be spent on service regulator inspection and repair, and what routine should be adopted for the purpose.

In some localities, particularly smaller systems, the meter reader listens to the seal and if it happens to be blowing will hear the gurgling of the mercury in the seal.

Another method is to provide for a service regulator inspector who at intervals visits the consumer and makes sufficient tests to determine the performance of the regulator. The length of these inspection intervals will depend on many factors peculiar to the local conditions. It does not seem that it should be shorter than one year, and perhaps should approach five or six years under fairly favorable conditions. This inspection should be recorded on a card index system.

An inspection of this type should be complete when made. It should be made without resorting to questioning the consumer. It should also be made to reproduce practically all operation conditions on the regulator so the control of outlet pressure can be observed under all these conditions. This means that if a test tee on the outlet end of the meter is not provided, the meter should be temporarily disconnected at the outlet and a connection made for testing purposes, like that sketched in Fig. 1.

Another method of inspection provides for removing the regulator from the service and bringing it back to the repair shop for repairs and test.

In making tests in a shop on new or repaired regulators, a simple testing arrangement can be made which will perform a complete test satisfactorily. This is shown in Fig. 2. In this figure, 1 is the service regulator under test, held in place by means of a quick acting clamping device 2.

No matter what method is used for holding the regulator, there are certain precautions which must be taken. First the actual member fitting into the outlet of the regulator, whether clamped or screwed, should have the full internal diameter of the standard outlet size of the regulator.

*Abstract of paper presented before 12th Annual Distribution Conference, American Gas Association, held at Cleveland, Ohio, May 2-4, 1935.

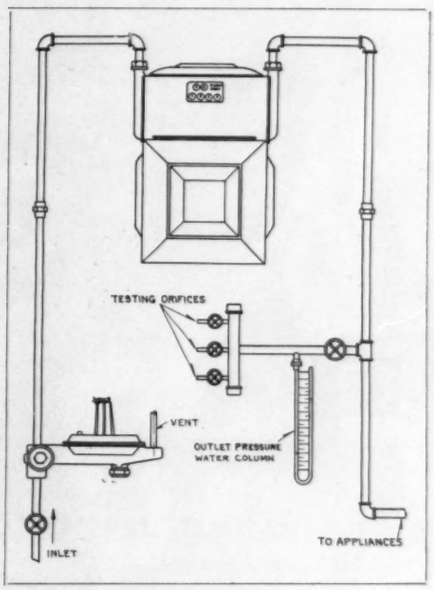


Fig. 2. Test Set-up.

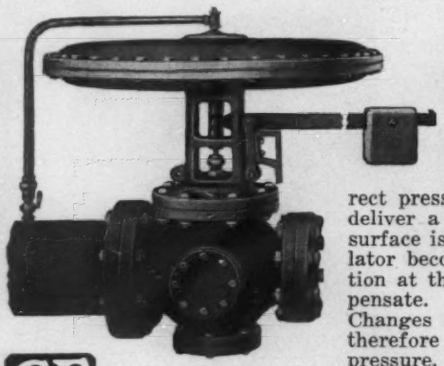
Another point to be watched in this test set-up is to see that the taps at which the pressure (particularly the outlet pressure) is taken, are made so as to give true pressure readings. The approved way is to weld a short ⅛-inch pipe nipple perpendicular to the outlet pipe, at a location 8 pipe diameters from the regulator outlet. By drilling through the wall of the outlet pipe, and cleaning up the burr made in drilling through, this tap will give true pressure indication when connected to the outlet water column 3. The inlet pressure tap should be made the same way, particularly if low inlet pressures are to be measured. The inlet pressure can be measured by a mercury column 4 if low or by a pressure gauge 5 if high.

The ability of the regulator can be quite accurately determined at but two rates of flow, and by using a three-way cock, whose ports lead to the proper sized orifices, the regulator can be made to operate at these two rates of flow by merely turning the three-way cock. This three-way cock is shown at 6.

With this type of test set-up it is possible to make a rapid and quick test which will check thoroughly all the operating characteristics of the regulator. Obviously a satisfactory pressure should be held during the normal consumption, which can be assumed for a domestic service to be about 20 cubic feet per hour. Thus the initial spring or weight setting is made at this rate of flow, using the three-way cock.

The next important point in testing is that the regulator should shut off at a point not too high above its flowing pressure, i.e., when the three-way cock is turned to the closed position the regulator will close off on a relatively small increase of pressure. This point should not be, depending on the

Valve Seats Renewed without Disturbing the Body of the Regulator



Fulton Low Pressure Regulator

THE Fulton Low Pressure Regulator can be fitted with new valve seats if desired, with the body of the regulator remaining undisturbed in the line. Plain directions will be mailed to any user on request. This regulator is capable of taking relatively high inlet pressures and reducing to the correct pressure for use. If the purpose is to deliver a very low pressure, the diaphragm surface is made very large so that the regulator becomes highly sensitive to any variation at the outlet and adjusts itself to compensate. Action is exact, positive and sure. Changes of pressure on the inlet side are therefore without effect on the delivered pressure. If gas supply should fail, automatic cut-off is provided. This Regulator is easy to install, never sticks, gives unfailing satisfaction. One of a line of regulators for all needs of gas control which has been known and approved for forty years. Catalog on request.

The Chaplin-Fulton Mfg. Company

28-40 Penn Avenue **Pittsburgh, Pa.**

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WESTCOTT & GREIS, Inc.
Sales and Service
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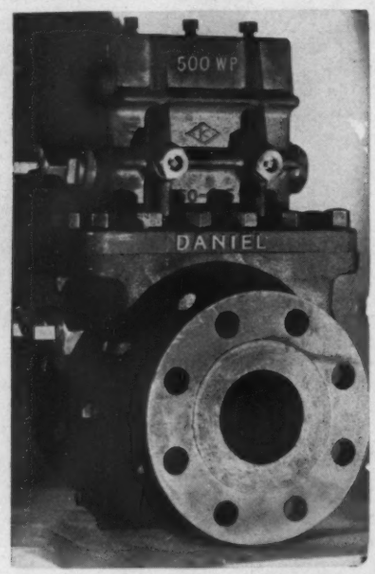
JNO. W. CRAWFORD
Sales Engineer
1855 Industrial Street, Los Angeles

PARSONS ENGINEERING CO.
Los Angeles, Calif. San Francisco, Calif.

OR ANY JOBBER



Daniel "Senior" Type Orifice Fitting

By a series of gears and one wrench, orifice plate in line can be changed under pressure in less than three minutes.

Eliminates expense of a by-pass. Occupies less space in the line. Works equally well on air, steam, dry gas, wet gas, or corrosive gas. Designed with high factor of safety for pressure and line strain. Made in all sizes and pressures. Prices on application. DANIEL ORIFICE FITTING CO., 2719 Elm St., Los Angeles, Calif.

valve material, more than ½ to 1½ inches above the setting pressure at the 20 cubic foot rate of flow.

Another point which must be watched is that the regulator has capacity ability enough to maintain a satisfactory outlet pressure. Thus the orifice connected to the remaining port of the three-way valve can be made to represent this volume. When the three-way cock is opened to this port, the outlet pressure as shown by the water column should not fall to too low a value.

While the regulator is on test, it should also be tested for leaks through the diaphragm. If the regulator has a single top diaphragm vent connection, a soap bubble should be placed on this connection. If there is any diaphragm leakage this bubble will break. If the regulator is provided with a mercury seal, it is probable that the top diaphragm chamber is vented through this seal, and by placing a soap bubble over the mercury seal venting connection, leaks through the diaphragm and the mercury seal can be detected.

Unique "Graduation Exercises" for L. A. G. and E. Students

Certificates for classroom work completed during the past school term were awarded to 750 members of the Los Angeles Gas and Electric Corp. Employees' Association on June 14, in an impressive ceremony at Bovard Auditorium, University of Southern California. Dr. Rufus B. von KleinSmid, president of the university, was the guest speaker on the subject of "Education for a New Day," being introduced by Addison B. Day, L. A. G. and E. president. Entertainment features were under the direction of Leo Carrillo, stage and screen star, as master of ceremonies.

Warren B. King, chairman of the company's educational committee, presented to each class sponsor certificates earned by his students during the past year.

The Employees' Association in its educational program offers evening instruction in 40 subjects, and enrollments during the past year numbered 1,448.

S. C. M. A. Drafts Officers for New Year

GATHERING at Lakewood Country Club near Long Beach, Calif., members of the Southern California Meter Association on June 27th elected a new set of officers to take the organization through its 10th year. The new administration is made up of the following:

F. E. Bradley

President: F. E. Bradley, Chanslor Canfield Midway Oil Co.

Vice-President: Guy Corfield, Los Angeles Gas and Electric Corp.

Secretary: G. S. Duncan, General Petroleum Corp.

Treasurer: M. L. Arnold, Richfield Oil Co.

Chairman Program Committee: D. M. Hill, Foxboro Co.

Chairman Entertainment Committee: George Christian, Pacific Meter Works, American Meter Co.

Chairman Standards Committee: B. G. Williams, Southern California Gas Co.

Chairman By-Laws Committee: R. F. Angell, Union Oil Co. of California.

Chairman Membership Committee: J. B. Taylor, Jr., Signal Oil & Gas Co.

Chairman Publications Committee: George H. Finley, *Western Gas.*

Edgar Wilde, president during the past year, expressed his thanks to his co-members on the board of directors for their cooperation throughout his term, and the new officers were introduced by C. B. Heartwell of the Standard Gasoline Co. who is a past-president of the Association and acted as chairman of the nominating committee.

F. E. Bradley, new president, has been active in the Association's enterprises ever since its organization, having served as chairman of the Program Committee during the 1933-1934 fiscal year.

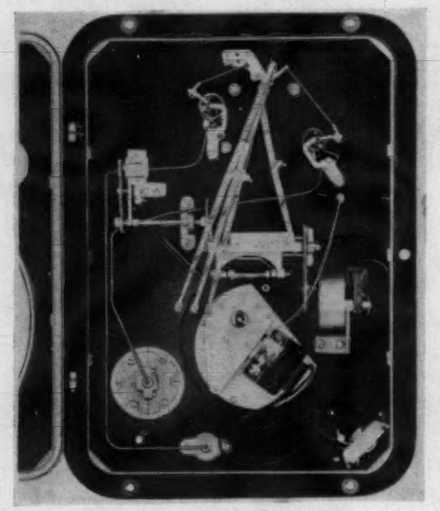
An interesting speaking program arranged for the evening included a discussion by B. G. Williams on application of Reynolds number and expansion factors to L-10 chart records. Mr. Williams is a member of the joint committee of West Coast associations now at work on applying the new A.G.A.-A.S.M.E. orifice meter data to use on the West Coast.

Charles A. Horrworth, field secretary for the All-Year Club of Southern California, was the second speaker, telling of the national advertising program conducted by his organization.

Bristol Co. Has New Mechanical Flow Meter

THE Bristol Co., Waterbury, Conn., has recently developed a new mechanical flow meter which employs the orifice and mercury manometer system of flow measurement.

The body of the instrument is constructed of forged steel, and connections are welded or mechanical. A lever arm connects the



float to the pen arm. The hardened stainless steel stuffing box is lapped to the shaft, and is grease-packed.

Different ranges of operation are made possible by changing either the size of the orifice, the high pressure leg of the manometer, or both. Check valves, gravity operated, prevent loss of mercury.

Meters for working pressures of 1,000 pounds are tested at 2,000 pounds. Special bodies tested at 5,000 pounds may be had for working pressures up to 3,000 pounds.

Meters may be used with either orifice plates or venturi tubes, and are available as indicators, integrators, recorders or controllers. Recorders can be furnished with pressure and temperature elements; integrating flow meters are obtainable either with or without automatic compensation for fluctuations in static line pressure.

The new flow meter when used in conjunction with the company's Metameter, may be used as an electric flow meter for remote reading.

W. J. Strong to Represent Payne Furnace & Supply Company

E. L. Payne, vice-president and general manager of the Payne Furnace & Supply Co., Beverly Hills, Calif., announces that W. J. Strong has been added to the sales staff of the Payne company and will represent the firm throughout Eastern Texas, Louisiana, Mississippi, Alabama and the Southern States as far south as Florida.

Mr. Strong for a number of years was connected with the Pennsylvania Furnace & Iron Co. and has been contacting utility companies in a sales capacity in almost all sections of the United States.

Interconnected pipes, provided with pressure gauge and valve, for testing special burners in advance of change-over to higher B.t.u. gas.

Minneapolis Change-over to Mixed Gas is Completed

MINNEAPOLIS (Minn.) Gas Light Co. on May 29 began distribution of mixed gas to its 140,000 consumers, and on June 1 put into effect new rates which will amount to an annual saving of approximately $300,000. The project began in the fall of 1934 and was completed at an expenditure of $1,000,000. The new service is composed of mixed natural and manufactured gas with a heat content of 800 B.t.u. compared with 505 B.t.u. of the water gas formerly served.

Natural gas used in the mixture comes 900 miles from the Texas Panhandle fields through a 26-inch pipe line, and connects with the Minneapolis Gas Light Co.'s 16-inch line on the south bank of the Minnesota River. Two 12-inch lines run under the river to the 16-in line on the north bank and thence to the southern limits of Minneapolis, to a border station where the pressure is reduced first to 150 pounds then to 40 pounds. From the border station the natural gas is delivered to the city plant through 20-inch lines where it is subjected to an oil scrubbing process. To a blue water gas base is added enough natural gas to raise the heating value to 800 B.t.u. The mixed gas is then odorized and oil fogged, and piped to regulator stations throughout the distribution system where the pressure is reduced to 3-4 ounces for the service lines.

W. E. Steinwedell of Cleveland, Ohio, dealt in some detail on appliance adjustment and system conversion with methods followed in the Minneapolis change-over, in a paper before the recent Mid-West Gas Association convention at Omaha. An illustration from Mr. Steinwedell's paper which appears above shows an interconnected nest of pipes mounted on a truck and filled with mixed gas at high pressure. This equipment was used for testing special burners prior to the change-over.

Maintenance Engineering Texas Distributor for Commercial Fitting

Maintenance Engineering Corp., Houston, Texas, is representing the Commercial Iron Works, Los Angeles, on the sale of Commercial orifice fittings in the Texas territory, according to C. E. Naylor, chairman of the board of the Maintenance Engineering Corp.

An item which appeared in the June issue of *Western Gas*, stating that the Foxboro Co. of Foxboro, Mass., had arranged to handle exclusive distribution of Commercial orifice fittings, should have indicated the above exception in Texas territory.

Guy Kendall Representing General Gas Light Co. in Southern Calif.

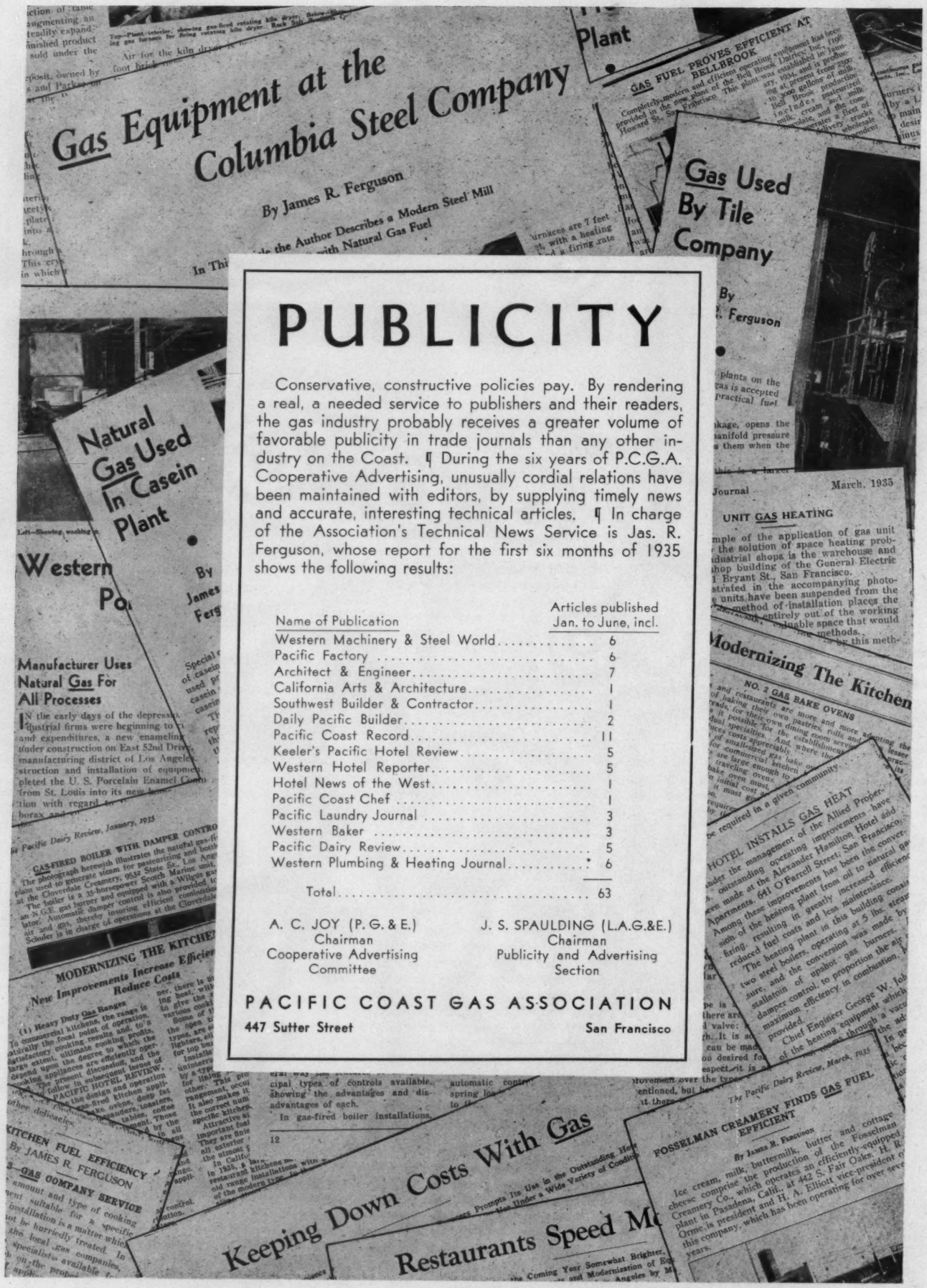
C. B. Babcock of San Francisco, Pacific Coast manager of the General Gas Light Co. of Kalamazoo, Mich., announces the appointment of Guy R. Kendall as Southern California representative. Mr. Kendall's office is located at 164 South Central Ave., Los Angeles, Calif.

Extension Granted in Los Angeles Franchise Order

On June 27 a four-month extension was granted by Judge J. T. B. Warne, on the Superior Court order requiring Los Angeles Gas and Electric Corp. to take out a franchise from the City of Los Angeles before July 12, 1935. The court also reserved jurisdiction in the case, maintaining the right to grant further extensions on proper showing, pending determination of the appeals to the California Supreme Court, which the city and the company now have under way.

It is understood that similar actions brought by the city against the Southern California Gas Co. and the Southern Counties Gas Co. are not being pressed pending outcome of the L. A. G. and E. case.

The original decision by Judge Edwin F. Hahn decreed that the gas company must apply for a franchise to use the city streets for all purposes other than distribution of gas for illumination, prior to July 12, 1935.


Gas Equipment at the Columbia Steel Company
By James R. Ferguson
Gas Used By Tile Company
Natural Gas Used In Casein Plant
Manufacturer Uses Natural Gas For All Processes
Modernizing The Kitchen
Keeping Down Costs With Gas
Restaurants Speed

PUBLICITY

Conservative, constructive policies pay. By rendering a real, a needed service to publishers and their readers, the gas industry probably receives a greater volume of favorable publicity in trade journals than any other industry on the Coast. ¶ During the six years of P.C.G.A. Cooperative Advertising, unusually cordial relations have been maintained with editors, by supplying timely news and accurate, interesting technical articles. ¶ In charge of the Association's Technical News Service is Jas. R. Ferguson, whose report for the first six months of 1935 shows the following results:

Name of Publication	Articles published Jan. to June, incl.
Western Machinery & Steel World	6
Pacific Factory	6
Architect & Engineer	7
California Arts & Architecture	1
Southwest Builder & Contractor	1
Daily Pacific Builder	2
Pacific Coast Record	11
Keeler's Pacific Hotel Review	5
Western Hotel Reporter	5
Hotel News of the West	1
Pacific Coast Chef	1
Pacific Laundry Journal	3
Western Baker	3
Pacific Dairy Review	5
Western Plumbing & Heating Journal	6
Total	63

A. C. JOY (P. G. & E.)
Chairman
Cooperative Advertising
Committee

J. S. SPAULDING (L.A.G.&E.)
Chairman
Publicity and Advertising
Section

PACIFIC COAST GAS ASSOCIATION
447 Sutter Street San Francisco

With the ASSOCIATIONS

John Keillor Elected President Canadian Gas Association

JOHN KEILLOR, gas engineer of the B. C. Electric Railway Co., Ltd., Vancouver, B. C., was elected president of the Canadian Gas Association at its 28th annual convention in Quebec City, June 10-11.

Other officers elected were: Vice-president, W. H. Munro, general manager, Ottawa Gas Co.; 2nd vice-president, Edward J. Tucker, assistant general manager and secretary, Consumers' Gas Co. of Toronto: Geo. W. Allen was reelected secretary-treasurer.

John Keillor

The executive committee elected to serve for the ensuing year is composed of the following: Arthur Hewitt, Toronto; J. M. H. Young, London (Ontario); V. S. McIntyre, Kitchener; D. G. Munroe, Montreal; T. P. Pinckard, Hamilton; Hugh McNair, Winnipeg; J. C. Dawson, Quebec; H. B. Fairweather, St. Johns; K. L. Dawson, Halifax; and J. J. Humphreys, Montreal.

The Association has selected Vancouver, B. C., as convention site for 1936 with the week of July 6 as a tentative date. The Pacific Coast Gas Association will hold its annual Northwest Conference jointly with the Canadian group in 1936.

Convention Arrangements Committee Chairmen Named for P.C.G.A.

GEO. S. CAMPBELL, general chairman of the Pacific Coast Gas Association's convention committee for the September 17-20 annual meeting, has announced his staff of co-workers who will take charge of the several branches of convention activity. Sessions this year are at the Huntington Hotel, Pasadena. Following are the chairmen of the various arrangements committees:

Program Chairman: William Maddock, L. A. Gas and Electric Corp.

Entertainment: O. L. Moore, L. A. Gas and Electric Corp.

Transportation: O. F. Adkins, L. A. Gas and Electric Corp.

Banquet: Geo. M. Sadler, L. A. Gas and Electric Corp.

Hotel Accommodations: Clyde H. Potter, Southern Counties Gas Co.

Reception and Attendance: W. M. Henderson, L. A. Gas and Electric Corp.

Golf: William Hoyt, H. R. Basford Co.

Publicity: Otto Mauthe, L. A. Gas and Electric Corp.

Registration: Wm. Fisher, L. A. Gas and Electric Corp.

San Diego Fair Trip: Ray Cavel, San Diego Consolidated Gas and Electric Co.

Hostess: Mrs. Wm. Moeller, Jr.

HENRY OBERMEYER
Past President

J. R. PERSHALL
President

Public Utilities Adv. Ass'n Elects New Officers

J. R. PERSHALL, advertising manager of the Public Service Co. of Northern Illinois, was elected president of the Public Utilities Advertising Association in the closing sessions of the conference held in Chicago, June 9 to 11, in conjunction with the annual convention of the Advertising Federation of America. The outgoing president of the group is Henry Obermeyer of the Consolidated Gas Co. of New York City.

Other officers elected were: First vice-president, D. D. Parry, Central Hudson Gas & Electric Corp., Poughkeepsie, New York; second vice-president, Kenneth Majers, Union Gas & Electric Co., Cincinnati, Ohio; third vice-president, Charles A. Tattersall, Niagara-Hudson Power Corp., New York City. H. W. Olcott, Jr., The Philadelphia Gas Works Co., Philadelphia, Pa., and Howard F. Weeks of the Consolidated Gas Co. of New York were reelected secretary-and treasurer, respectively.

Al C. Joy, Pacific Gas & Electric Co., San Francisco, Calif.; S. J. Ballinger, San Antonio (Texas) Public Service Co.; and Miss Clara H. Zillessen, Philadelphia Electric Co., Philadelphia, Pa., were elected directors for a three-year term. Henry C. Obermeyer, past president, also became a director of the group.

C. G. Cassidy, superintendent of advertising, The Peoples Gas Light & Coke Co., has been appointed editor by incoming president Pershall of the bi-monthly bulletin circulated to the members of the organization.

A. G. A. To Convene in Chicago For 1936 Meeting

The Palmer House, Chicago, Ill., has been selected as headquarters for the 17th annual convention of the American Gas Association to be held the week of October 14.

Facilities of the Palmer House are ample to provide for general business sessions and entertainment features of the convention as well as a number if not all of the sectional meetings. The Palmer House is centrally located in Chicago's famous loop district.

A. G. A. headquarters advises that reservations should be made by writing direct to the hotel.

P. C. G. A. Committee Selected to Submit Nominations

Wm. Moeller, Jr., president of the Pacific Coast Gas Association, has appointed a nominating committee to select a president, vice-president, treasurer and four directors for official nomination at the coming convention dated for September 14-17 in Pasadena. The members of the committee are:

Jas. L. Stone, vice-president and general manager, Spokane Gas and Fuel Co., chairman.

Geo. A. Campbell, president, Sierra Pacific Power Co.

F. A. Cressey, Jr., H. R. Basford Co.

E. P. Millikan, American Stove Co.

W F. Raber, president, San Diego Consolidated Gas and Electric Co.

Western United Appoints C. W. Tennant Gen. Sales Mgr.

George R. Jones, president of Western United Gas & Electric Co. of Aurora, Ill., has announced the appointment of C. W. Tennant as general sales manager of the company, a newly created position. Mr. Tennant was formerly merchandise sales manager of the company and is succeeded by Daniel Garrity in this position.

Electric Cookery in National Advertising Campaign

The National Electrical Manufacturers Association, at a recent meeting of the Range Section of the Association decided to inaugurate a national advertising campaign on electric cookery. National magazines having particular appeal to women will be used in the campaign effective July 1.

Calendar

July

P.C.G.A. Northwest Regional Conference—Tacoma, Wash., July 11-12.

West Coast Corrosion Conference—Los Angeles Gas and Electric Corp. Auditorium, 810 South Flower Street, Los Angeles, Calif., July 23.

August

American Chemical Society — Annual Meeting, San Francisco, Calif., week of August 19.

September

Pacific Coast Gas Association—Annual Convention, Hotel Huntington, Pasadena, Calif., September 17-19.

October

American Gas Association—Palmer House, Chicago, Ill., October 14-18.

November

American Petroleum Institute—16th Annual Meeting, Biltmore Hotel, Los Angeles, Calif., November 11-14.

American Institute of Chemical Engineers—Annual Meeting, Columbus, Ohio, November 13-15.

Corfield Made Research Engineer for L. A. Gas and Electric

Guy Corfield

GUY CORFIELD, chemist for Los Angeles Gas and Electric Corp. since 1928 and with the company since 1924, has been appointed research engineer, effective June 1. He will have charge of special investigation work for the company in all phases of manufacture and distribution.

The appointment is in line with Mr. Corfield's varied work of the past few years, which has taken him into numerous lines of engineering research, on pipe protection, gas utilization, and general distribution matters such as humidification and internal corrosion.

Gas Industry Maintains NRA Standards

THE Executive Board of the American Gas Association on May 31, four days after the Supreme Court NRA decision, adopted the following resolution:

"The gas industry has endeavored to cooperate with the government's recovery program. Although largely intrastate in character, and regulated by the states it believed itself beyond the lawful scope of the National Industrial Recovery Act or of Federal regulation. Nevertheless it presented to the National Recovery Administration codes covering both the manufactured gas and natural gas business. Many companies signed the President's Reemployment Agreement. Perhaps in recognition of the different constitutional status of the gas industry, the NRA never took final action on the gas codes presented to it. Recently the United States Supreme Court has declared the NRA to be unconstitutional in terms that clearly establish the impropriety of Federal regulation over the gas industry with its special characteristics. Nevertheless, as a matter of sound public policy, and as a means of cooperation with national recovery until the economic situation is clarified, it is

"RESOLVED, that this, the Executive Board of the American Gas Association recommends to the member companies of the Association, as far as economically possible and consistent with their obligation to serve their customers at the lowest rates, that the standards of wages and conditions of employment as contained in the proposed codes, be maintained."

Mrs. Mildred Sitterley Made Home Service Director for Wyandotte

The Wyandotte County Gas Co., Kansas City, Kan., has appointed Mrs. Mildred Sitterley home service director of the company, to work under the direct supervision of Jack Torbert, new business manager. Mrs. Sitterley is a graduate of Ft. Hays Teachers College and attended the Kansas State College at Manhattan where she specialized in home economics. She has conducted newspaper cooking schools for several years throughout the middle-western states.

Central Arizona Light & Power Co. Reduces Rates

Gas and electric rates of the Central Arizona Light and Power Co., Phoenix, Ariz., have been reduced approximately $200,000 annually, through a compromise order of the Arizona Corporation Commission, which became effective April 1, 1935. The new gas rate is retroactive to September 1, 1934, and calls for a charge of 24 cents per therm for the first 20 therms, 10 cents per therm for the next 15 therms, and 7.5 cents per therm for additional therms used. A service charge of 2.5 cents per day is also made to the consumer.

Kentucky Utility Resumes Line Extensions Begun in 1932

The Kentucky-Tennessee Light & Power Co., Bowling Green, Ky., is completing the extension of the natural gas distribution system in Hopkinsville, Ky., started in 1932 but stopped by the depression. Belt lines are being installed in the western, northern and southern sections of the city to connect the main trunks of the natural gas distribution system.

Water Heater Sales Increase Credited to Sales-Rental Plan

Addition of over 600 automatic water heaters in the Portland Gas and Coke Co. system has been credited to the current sales-rental plan of the company. Approximately a third of the installations replaced furnace coils and other obsolete water heating equipment, and half replaced non-automatic heaters of ancient types, it was estimated.

Ark-La. Gas Co. Moves To More Spacious Quarters

The Arkansas-Louisiana Gas Co., Shreveport, La., is moving from the Ardis Building into more spacious quarters in the Slattery Building. The sales and local office will have larger and better accommodations on the ground floor, and the pipe line, measurement and engineering departments will occupy the sixth, tenth and eleventh floors at the new location.

F. A. McMurray on West Coast

F. A. McMurray, representing the National Superior Co., Toledo, Ohio, on pipe couplings and clamps, was on the west coast last month, spending some time in Los Angeles and San Francisco, returning late in June to Chicago, Ill., where he makes his headquarters.

Replacement Line Completed

A 3-mile replacement line has been completed between Hunnewell and South Haven, Kan., both served by the Western Natural Gas Co. The new line will be cut into the system early this summer.

New District Agent

George A. Porter, manager of the Burbank, Calif., branch office of the Southern California Gas Co., Los Angeles, has been made district agent at Van Nuys, Calif.

U. S. SUPER DeLAVAUD

CAST IRON PIPE

Made by

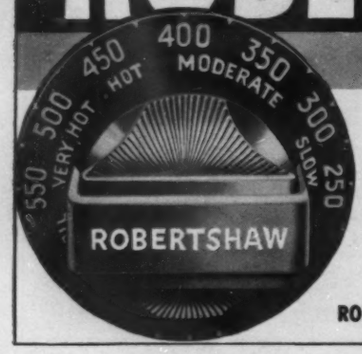
U. S. PIPE & FOUNDRY COMPANY

BURLINGTON, N. J.

Sales Offices and Foundries Throughout the United States

ROBERTSHAW

THERMOSTATS



Over two million in daily use on gas ranges. Hundreds of thousands in daily use on water heaters, space heaters and every type of gas appliance.

Dependability Counts!

ROBERTSHAW THERMOSTAT COMPANY · YOUNGWOOD, PA.

GAS HEATING

Special

DURING JUNE, JULY AND AUGUST

10% OFF

DEALERS: *Can you imagine an ad like this, over your signature, failing to produce business?*

+

F·H·A·Terms

No Down Payment—Three Years To Pay

+

Oct. Billing

No Monthly Payments Until Oct. 1

See your local P.G.&E. office about participating in the 1935 Summer Gas Heating Campaign.

DO IT NOW!

This offer applies to all types of Gas heating equipment except circulating heaters.

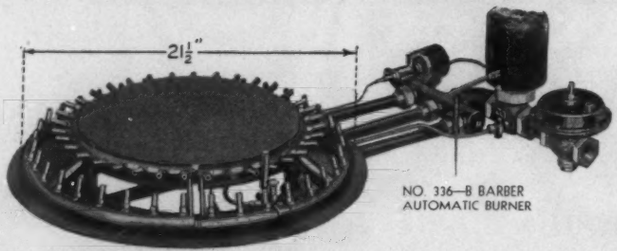
ALL DETAILS OF FINANCING ARRANGED FOR YOU . . . NO RED TAPE . . . NO DELAY

Your Signature

P·G·and E·

PACIFIC GAS AND ELECTRIC COMPANY—OWNED, OPERATED, MANAGED BY CALIFORNIANS

On Your "Difficult Jobs"—
Use BARBER BURNERS!



NO. 336—B BARBER AUTOMATIC BURNER

SPECIFICATIONS, not advertising superlatives, make conversion burners SELL and STAY SOLD. Compare Barber design, construction and performance record with those of any other gas conversion burner on the market.

Tailor-made to suit and fit the grate dimensions of round or oblong furnaces or boilers. Insure proper scrubbing flame action on side walls of firebox. Equipped with Baltimore or Klixon Safety Pilot for positive and accurate control. Listed in the A.G.A. Directory of Approved Appliances.

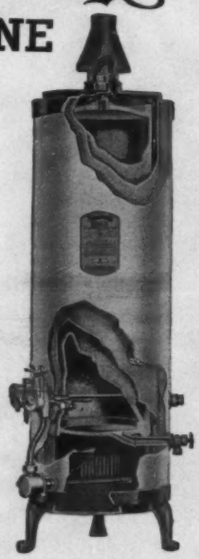
Write today for New Illustrated Descriptive Bulletin and REVISED Prices.

THE BARBER GAS BURNER CO.
3704 Superior Ave. Cleveland, Ohio

BARBER *Automatic* JET GAS **BURNERS**
for Warm Air Furnaces, Steam and Hot Water Boilers

Welsbach
HOTZONE

Self-action storage gas water heaters



Approved by A. G. A. Laboratory

Heaters are made in all domestic sizes with 300 lb. test galvanized or Everdur tank.

Write for Details

WELSBACH COMPANY
Gloucester City, N. J.
SAN FRANCISCO, CALIF. CHICAGO, ILL.

WARD
FLOOR FURNACES
meet every test!

Although A. G. A. approval of WARD FLOOR FURNACES (which must be renewed every 5 years) does not expire until next year—we have arranged for WARDS to go through the A. G. A. laboratories NOW for tests under the rigid new requirements.

IF your customers demand QUALITY you owe it to them to show them a WARD . . . 19 models, a WARD for every need.

Your load is as good as the appliances you sell!

Ask us for further information.

WARD HEATER CO.
1800 WEST WASHINGTON BLVD.
Telephone PArkway 9171
LOS ANGELES

MODERN METHODS AND MATERIALS

A letter to WESTERN GAS will bring you any of the selected reference bulletins listed below, without cost. Indicate by number which you desire.

NO. 68—BURNERS

Catalogue of specifications and cutaway illustrations for complete line of both manually controlled and automatic house heating and industrial burners. Installation diagrams. Specifications for vertical boilers. Fuel consumption data. Specification charts for sectional boilers. 34 pages.

NO. 69—DESIGN OF PIPING SYSTEMS

Bulletin giving most economical pipe sizes and degree of frictional resistance in straight pipe and bends for design of industrial piping system. Chart for pipe size and pressure drop determination. Data cover flow of fuel oil, lubricating oils, water, brine, gasoline, ammonia, steam, air, oxygen, nitrogen and hydrogen.

NO. 70—STEEL SPECIFICATIONS

S.A.E. official steel specifications, chemical compositions, revised to January, 1935. Reprinted in convenient reference form by manufacturer.

NO. 71—AIR CONDITIONING

Booklet for prospective buyer of summer air conditioning equipment describing system of dehumidifying and cooling by separate operations. 16 pages, illustrated with installation views.

NO. 72—NEW RANGE MODELS

Catalogue on 1935 range line, with separate sheets devoted to each model. Complete illustrations of range accessories and parts.

NO. 73—DIAPHRAGM VALVES

Reference bulletin on line of diaphragm control valves, with pressure rating curves and tables of maximum pressures. Charts for sizing V-port and needle valves, with capacity curves for steam, liquid, air and gas flow. 16 pages.

NO. 74—COMPRESSION COUPLINGS

Specifications for new type compression coupling with information on installation and use.

NO. 75—STORAGE WATER HEATERS

Line of automatic storage gas water heaters with copper boilers. 28-page booklet with diagrams and cutaway illustrations, dimension data on all models. Equipment for both domestic and large volume water heating described.

NO. 76—GAS OIL ENGINE

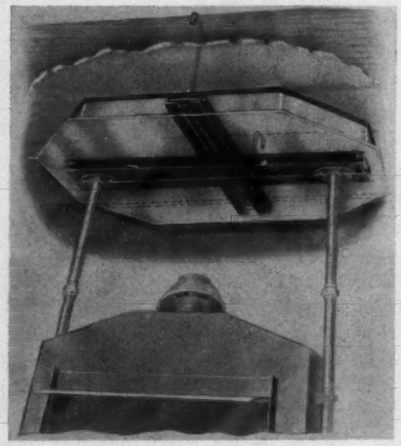
Horizontal 2-cycle type of gas oil engine described in 8-page bulletin with full specication data.

NO. 77—PORCELAIN ENAMEL

Manufacture, application, and service characteristics of porcelain enamel covered in illustrated sales manual.

Inland Mfg. Co. Announces Improvements in Heater Hanger

The Inland Manufacturing Co. of Chicago, Ill., manufacturers of gas heating specialties, have recently announced improvements in their unit heater hanger and canopy, consisting of the insertion of acoustical rubber at two points which prevents



metallic contact between the unit heater and the ceiling.

The rubber reduces the sound and vibrations set up by the heater and eliminates conduction to the supporting structure. The canopy now is equipped with rubber moulding around its upper edge.

The hanger, consisting of two separate frames made of channel irons, is adjustable and will support and fit all sizes of gas unit heaters. It is easily suspended from any ceiling or roof joists. The upper or ceiling frame is fastened to ceiling joists with two hook bolts, or lag bolts. The lower or unit heater frame is supported by a single ½-inch machine bolt from the upper frame which permits the rotating of the unit heater to any angle and the changing of the angle while the heater is in place. Only two small holes need be cut in a finished ceiling to install the hanger.

The aluminum finished canopy, supported entirely by the lower frame, is used in cases where it is desirable to completely conceal the hangers.

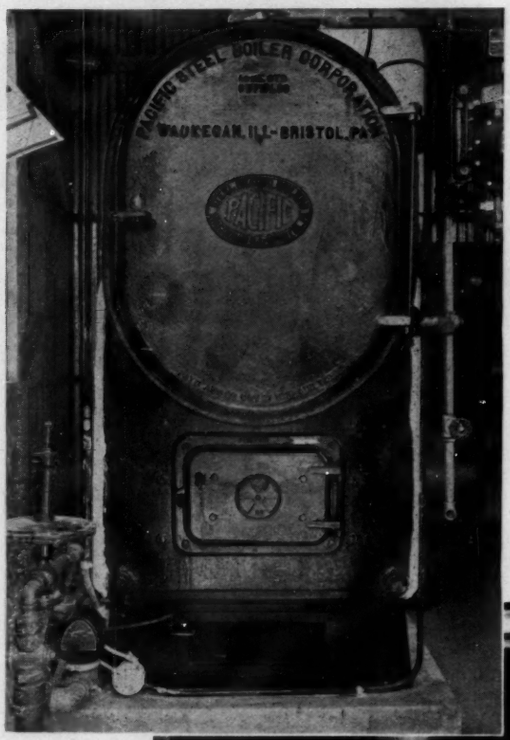
Distribution of the hanger, the Inland automatic gas cock switch, the Inland safety gas cock and other products of the company, is handled through the Chicago headquarters of the company and the A. Y. McDonald Mfg. Co., Dubuque, Iowa.

Gilmour Named District Agent for S. D. Consolidated

W. J. Gilmour has been named district agent for the San Diego (Calif.) Consolidated Gas & Electric Co. at La Jolla, Calif., according to an announcement by A. E. Holloway, vice-president of the company. Mr. Gilmour succeeds J. P. Brown, who is taking a leave of absence because of ill health.

Prior to his connection with San Diego Consolidated Gas & Electric Co. in 1923, Mr. Gilmour had been associated with the Northern States Power Co. for 12 years.

N. G. E. 313 BURNER



Qualifies
in **SIZE, CAPACITY EFFICIENCIES CONTROL FLEXIBILITY** *as the* **IDEAL** *conversion burner for commercial installations*

Above is shown one unit of the No. 313 N.G.E. Burner.

The N.G.E. No. 313 is designed particularly for vertically firing Birchfield, Pacific, Kewanee and similar steel boilers. Illustrated is a typical installation in a Southern California manufacturing plant.

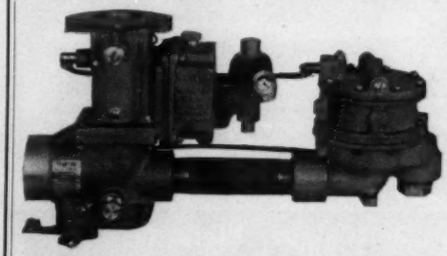
NATURAL GAS·EQUIPMENT INC.

Petroleum Securities Bldg. Los Angeles, Calif. — **1123 Harrison St. San Francisco, Calif.** — **Arizona distributors Crane Co.**

Distributed East of Rockies by Surface Combustion Corporation—Toledo, Ohio

LOOK TO THE PIONEERS FOR CONTINUED LEADERSHIP

Use Gas or Gasoline for Fuel with the
ENSIGN COMBINATION
Gas and Gasoline CARBURETOR



This Ensign Combination Carburetor permits you to use either gas or gasoline for fuel. Change instantly from one fuel to the other. No intricate adjustments or changing of fuel lines. Combines all the conveniences and advantages of both types of carburetors in a single unit. Adapted to practically all types of stationary engines and backed by years of successful performance. Detailed information on request.

ENSIGN CARBURETOR CO., LTD.
7010 South Alameda St. P. O. Box 606
Huntington Park, Calif.

"President's Month" Big Success for B. C. Electric

By J. H. TAYLOR
Merchandise Department, B. C. Electric Railway Company, Ltd.

AS a tribute to the leadership of the company's president, W. G. Murrin, the month of May was declared "President's Month" by the B. C. Electric Railway Co., Vancouver, B. C., and employees of all departments were united in a special load-building program which went far above the quotas set at the start.

In the President's Month campaign every sales representative and inside sales clerk of the merchandise department was given a personal quota for the month, and in addition each district salesman was given a district quota. The employees of other departments were asked to forward to the merchandise department names of prospects for gas and electric appliances.

Following up the original pamphlet sent to every employee of the system, outlining the campaign and listing appliance prices and bonuses, constant reminders of President's Month were placed before all of the employees by means of easel cards, with prospect forms enclosed, placed in each office, and a pamphlet or blotter dealing with some part of the month's activities left on each desk. Continued enthusiasm was maintained by a large board in the entrance corridor of the head office, on which the daily sales and sales to date, also the daily quota and quota to date, were marked up each morning. The board also listed the number of prospects turned in by other than merchandise employees. The employees in the departments were divided into groups to create campaign interest and rivalry. A letter from W. C. Mainwaring, merchandise manager, was sent to each of the department heads and to all members of the sales staff every few days covering some activity of the campaign.

The company for some time has been operating an employees' cooperative prospect plan under which bonuses, varying in value, are paid for prospects which are closed by the merchandise department. During President's Month this regular bonus was paid in addition to three special prizes of $25, $12.50, and $7.50, which were awarded to the employees who turned in the greatest number of prospects sold during the month of May.

Period prizes were awarded at the end of each 8 days to the two outside salesmen obtaining the greatest percentage of their quota on the 8th day.

The last day of the campaign was marked by a "Dawn to Midnight Drive," in which over $15,000 worth of the total business of the month was closed. Each sale made during this last day was marked with a time sticker indicating the time at which the order had been sold, and the 10 salesmen who sold the orders closest to the times specified on a list made by President Murrin each received a personal check from the president.

The record sale of $104,100 worth of gas and electric appliances was far in excess of the $75,000 quota set, and the reason for this is no doubt the contagious enthusiasm with which the campaign "caught on" and was carried out by the various members of the merchandise department and other members of the company.

Gas Service Co. Inaugurates New Payment Plan for Service Lines

The Gas Service Co., Kansas City, Mo., has inaugurated a plan which allows prospective customers in 20 communities in the Union Public Service Co.'s Beloit, Kan., group of properties, to combine payment for service lines with payments for gas appliances and connections under a payment plan extended over a 2-year period.

A similar plan will be offered to the Ozark Distributing Co. groups operating in 18 communities out of Monett, Warrenburg and Carrollton, Mo., and the three communities of the Union Public Service Co. operating from Hiawatha, Kan.

Lebanon, Ky., to Have Natural Gas Service

Lebanon, Ky., has granted a 20-year franchise to Albert Kalo, representing Indianapolis interests, for the service of natural gas to that community. A company with a capitalization of $100,000 is to be formed, and construction is scheduled to start immediately service beginning by fall, 1935. Supply will be obtained from the Caney Creek structure, located between Lebanon and Bradfordsville, Ky. The wells, owned by the Wagner Syndicate of Indianapolis, are producing about 3 million cubic feet daily. The franchise specified that service must start before May, 1936.

San Diego Co. Refinancing Issue Authorized

The San Diego Consolidated Gas & Electric Co. has been authorized by the California Railroad Commission to issue $15,500,000 in first mortgage 4 per cent bonds, to be used to retire $15,880,000 outstanding bonds of higher interest rates. The refinancing will effect a substantial saving to the company. The bonds to be retired bear interest rates of 5, 5½ and 6 per cent. The company has been authorized to sell the new bonds at not less than 95 per cent of their face value, plus accrued interest.

P. G. and E. in Refunding Program

The Pacific Gas and Electric Co. in June was authorized by the California Railroad Commission to place on the market $30,000,000 of 4 per cent first and refunding mortgage bonds, series G, to expire December 1, 1964.

PAYNE
Console Heaters

Payne Console Heaters are correctly priced, beautifully finished in colors to harmonize with room surroundings, and afford maximum heating efficiency. Four sizes available for apartments, offices, schools, homes. Vented installation is recommended, but they are A.G.A. approved either with or without.

For anything in GAS heating write

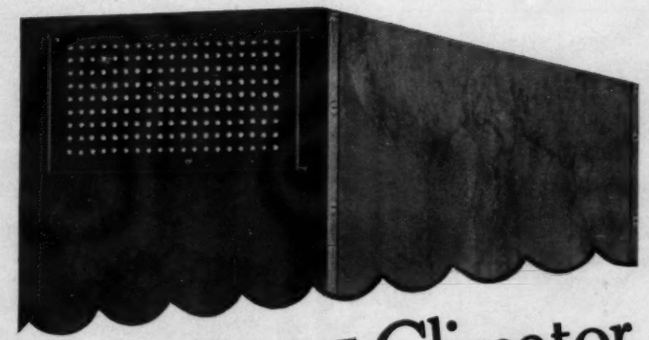
PAYNE FURNACE & SUPPLY CO.
BEVERLY HILLS, CALIFORNIA

REFRACTORIES
GENERAL CERAMICS COMPANY
• REFRACTORIES •

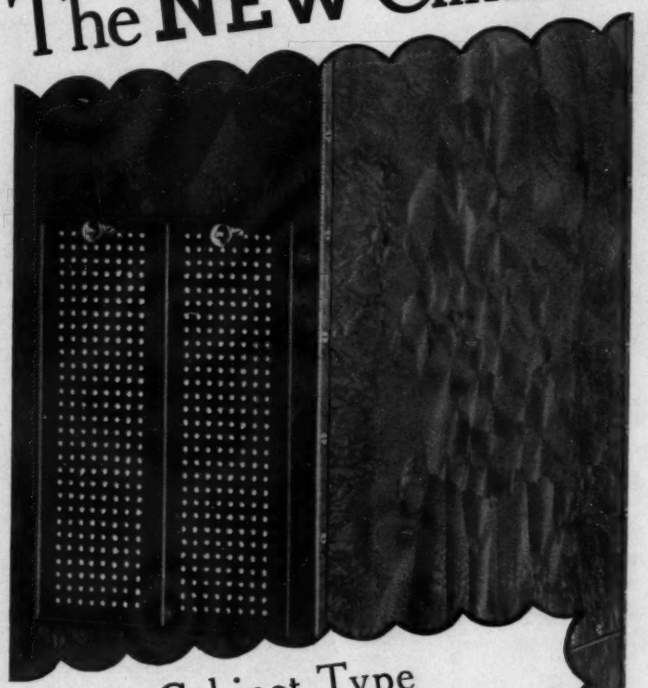
For Conversion Burners, Circulating Heaters, etc.

Because they are uniformly accurate, strong, and dependable in every way, General Ceramics Refractories are used by most of the leading manufacturers of gas heating appliances. • Our engineers will gladly cooperate with you.

General Ceramics Company, 30 Rockefeller Plaza, New York



The NEW Climator



Cabinet-Type UNIT HEATER

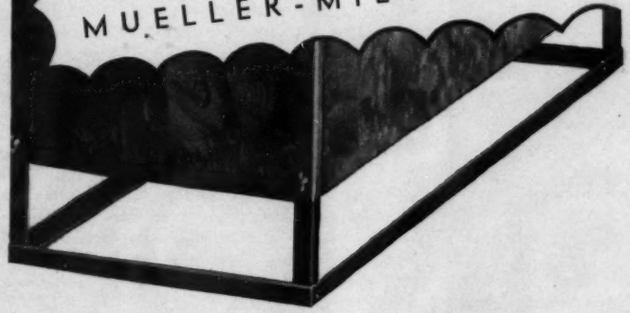
—the floor-type, heating-filtering-humidifying unit for stores, small buildings, and no-basement homes. Independent, removable, compact.

Discharges through cowl or ducts. Heats, (standard GAS-ERA steel unit) humidifies, filters, and circulates. Size 83″ high, 48″ deep, and 17″ wide with 2 sections—extra sections add 8″ each.

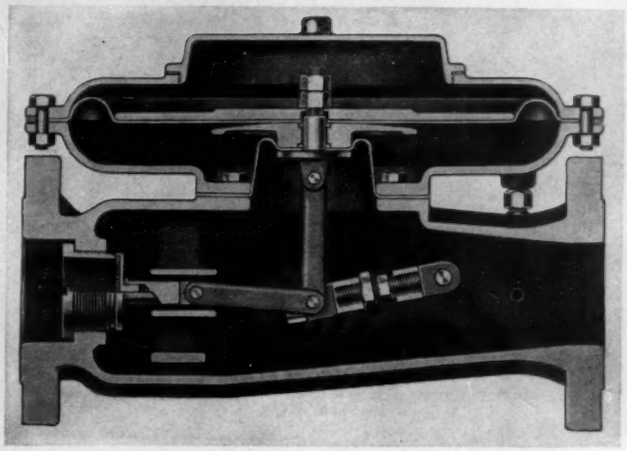
Write for details and prices

L. J. Mueller Furnace Co., Dept. WG7, Milwaukee

MUELLER-MILWAUKEE



Performance

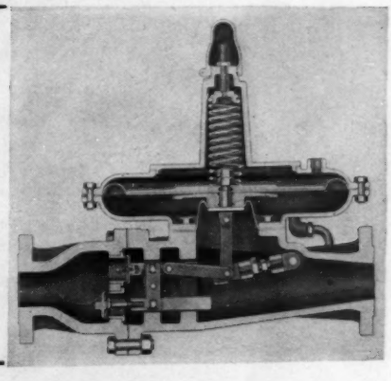


REYNOLDS Toggle Type Regulators for industrial Gas Control, proved by performance in actual operation, guarantee smooth, constant outlet pressure and volume even though inlet pressure and volume are decidedly jumpy. Some of their outstanding features are: Removable Valve Pocket and Orifices; Side Hand Holes; Streamlining that directs the flow of Gas, increasing capacity and range; pressure reduction* from pounds to pounds and pounds to inches W. C.; single or double valve construction; spring or dead weight type adjustment and equipped with or without pilot control.

*Body of Regulator is so machined that a pounds to pounds diaphragm casing, or a pounds to inches W. C., diaphragm casing may be used or interchanged. Also equipped with removable inlet spool with orifices which permits installation of various sizes of orifices while Regulator is in pipe line.

ABOVE—
Cross-section view—
REYNOLDS
Dead Weight—
Single Balanced Valve,
Toggle Type Regulator

AT THE RIGHT—
Cross-Section
REYNOLDS NEW
Streamlined Regulator
which guarantees
greater capacity—
truer response—more
uniform performance



REYNOLDS BRANCH OFFICES: 421 Dwight Bldg., Kansas City, Mo.; 2nd Unit, Santa Fe Bldg., Dallas, Tex.
REPRESENTATIVES: Eastern Appliance Co., Boston, Mass.; F. E. Newberry, Avon, N. J.; G. H. Unkefer, 428 Boyd St., Los Angeles, Calif.

REYNOLDS GAS REGULATOR CO.

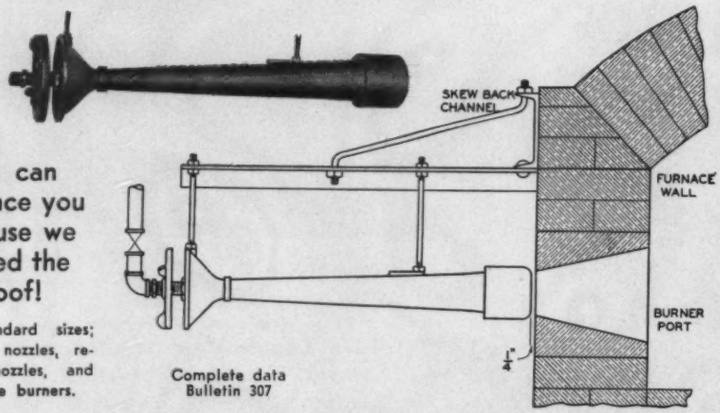
ANDERSON, INDIANA, U. S. A.

GAS CONTROL SINCE 1892

D F C Inspirator Burner—Series B

In this and other types, DFC burners meet every industrial need.

Injects all the air required for complete combustion of high heat value Natural gas. Constant air injection ratio and satisfactory operation at pressures from ½ to 30 lbs. Positive flame retention at all pressures. Extremely low turn-down without back-firing.



We can convince you because we burned the proof!

Eight standard sizes; cast iron nozzles, refractory nozzles, and two-stage burners.

Complete data Bulletin 307

THE DENVER FIRE CLAY COMPANY

DENVER DFC COLO.U.S.A.

BRANCHES AT SALT LAKE CITY, EL PASO, AND NEW YORK

A. G. A. Approved

PEERLESS
RADIANT GAS HEATERS

◆

Attractive
Efficient
Economical
Sturdy
Guaranteed

WRITE FOR DETAILS

PEERLESS MANUFACTURING CORP.

1400 W. ORMSBY

LOUISVILLE, KENTUCKY

Western Gas

is compressed by

COOPER-BESSEMERS

50 to 1600 horsepower

COOPER-BESSEMER CB CORP

THE COOPER-BESSEMER CORPORATION

640 East 61st St. Los Angeles, Calif.

PLANTS: Mt. Vernon, Ohio — Grove City, Pa.

Dealer Cooperative Plan

(Continued from Page 15)

ing with monthly sales promotion. Uniform display cards carrying the name of the dealers are used on all appliances. A schedule is arranged for dealer salesmen on our display floor. All dealers in this cooperating plan are required to sell only A.G.A. approved appliances and this has resulted in a better class of merchandise and satisfied consumers.

This program contains complete instructions to our salesmanagers and contains quotas for all appliances by districts.

It provides an incentive for employee cooperation.

Training courses are held periodically for our salesmanagers and engineers in order to keep them informed on modern sales methods and the development of modern appliances.

Our sales plan is showing surprising results in dealer sales and has proven one of our best public relations movements. Appliance sales have increased each year since 1932, but 1935 sales to May 1 show 48 per cent increase over 1934. Dealer sales of gas appliances in 1932 totaled 14,085 appliances; 17,386 in 1933; 26,951 in 1934.

A few typical sales promotion activities conducted by the company are suggested below.

House Heating

Under certain conditions the company will loan a standard make gas conversion burner, provided the prospect is located on its present gas lines and that he pay his plumber or heating contractor the installation charge. The plan operates as follows:

The district manager or local manager mails a letter to users of other fuel furnaces or boilers, introducing the gas offer and inviting them to call. When a prospect accepts the offer, he advises the company of his preferred dealer, and the company then informs the dealer that it will furnish the conversion burner. The dealer makes the estimate of installation costs and is responsible for collecting installation fee from the customer.

Installation specifications are set up by the gas company, and a high order of work is insisted upon. Each installation is inspected by the company before the prospect pays the installation charges. A 12-month record is maintained by the sales department to see that heating jobs give satisfaction.

Gas Ranges

A quota of 12,000 ranges with oven-temperature control and clock control has been set for 1935 on the Oklahoma Natural system. In each town of over 2,000 meters the company is offering to each dealer an amount equivalent to the cost of a clock control on one gas range sold during the year. The range sold under this offer must be A. G. A. approved and sell for at least $100 without the control.

Oven canning contests and cake baking contests are being conducted for purchasers of new ranges and suitable cash prizes made in each district. Contest exhibits and judging are held in company store windows wherever practicable.

New Meters Campaign

During 1935 Oklahoma Natural is endeavoring to add 6,066 meters to its lines. Something over 4,000 meters were added last year. Quotas have been assigned by district and town, and employee effort in developing prospects is being encouraged in a number of ways.

Water Heater Servicing

(Continued from Page 17)

vious lessons on manually operated and automatic storage heaters.

2. With throttling thermostats (P. 52).

3. With snap thermostats (P. 52):

Since practically none of this type of heaters has by-pass adjustments because the flame is either on or off, the pilot adjustment is very important. The safety pilot flame must be high enough just to touch the control element, and it must be high enough to assure opening of the safety pilot valve so as to pass the full gas supply. The details for accomplishing this depend on the internal construction of the safety pilot.

C. Adjustable recovery heaters (Pp. 52-53):

1. Type adjusted by customer.

2. Type adjusted by fitter.

II. Instantaneous heaters (Pp. 53-54):

A. Regular water heater servicing procedure used.

B. Moment valve, pilots, and thermostat (P. 53): Thermostat of instantaneous heaters is located in the hot water line.

C. Main burner (Pp. 53-54):

The main burner on an instantaneous heater is usually made up of a cluster of separate burners, each equipped with its own orifice and air mixer. The B.t.u. rating of the heater is given as that of all the separate burners combined, and to determine the rating for each separate burner; divide this total B.t.u. rating by the number of burners and then determine the size orifice for each.

D. Adjustment for water temperature (P. 54).

E. Flue:

Since the gas consumption of instantaneous heaters during their relatively short periods of operation is much greater than that of any other type heater, the flue should be of sufficient size and free from long runs and traps to properly remove the products of combustion.

F. Condensation (P. 54).

III. Multi-coil heaters: Same procedure is followed (P. 54).

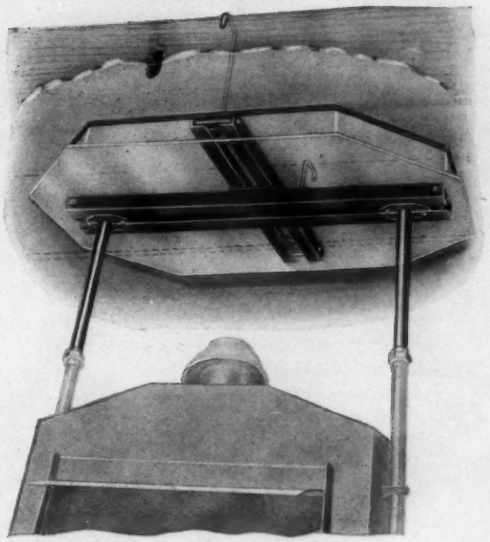
IV. Other large volume water heaters (P. 55).

V. General instructions for servicing all water heaters (Pp. 59-60).

VI. Relief valves and emergency shut-offs (P. 60).

VII. Trouble shooting (Pp. 62-66):

Drain several gallons of water from a tank heater to make certain there is no dirt in the tank. To determine if a heater is limed up, allow heater to operate until tank or coils are completely full of hot water. Then turn off gas and turn on hot water faucet full. This permits cold water to enter the heater. Immediatey feel of coils or bottom of tank. If the coils or bottom of tank cool at once, they are free from scale. If they



HANGER AND CANOPY by INLAND

The Inland Unit Heater Hanger is a sturdy, well designed device for hanging all sizes of unit heaters.

Two acoustical rubber cushions completely isolate the heater from metallic contact with ceiling. The cushions reduce the vibration and sound caused by the heater and prevent conduction to supporting structure.

The hanger is adjustable and permits rotating the unit heater to any angle on a horizontal plane. THE ANGLE OF THE HEATER MAY BE CHANGED WHILE IN PLACE.

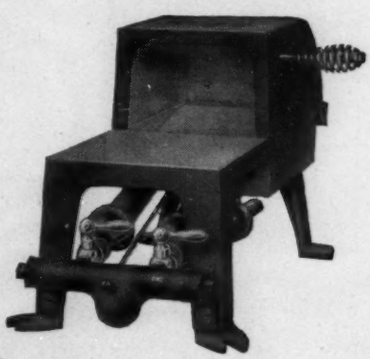
The hanger is readily suspended from any ceiling or roof joists, only requiring two hook bolts, as shown, or lag bolts. In making an installation on a finished ceiling only two ¾ x 1½" holes are necessary.

The savings in labor will more than offset added cost of hanger.

The aluminized, rubber cushioned canopy is for use in spaces where it is desirable to cover hanger for a finished appearance.

Send for folder describing our gas heating specialties.

INLAND MANUFACTURING COMPANY
1120 N. CICERO AVE. CHICAGO, ILL.



JOHNSON SOLDERING FURNACE

For heating soldering coppers up to 12 lbs. per pair, this No. 502 furnace will render fast, efficient service. Stout construction insures long life. Two powerful Burners provide intense heat without forced air blast. Write for free catalog giving full details.

JOHNSON GAS APPLIANCE CO. Cedar Rapids IOWA

Western Representative:
C. B. BABCOCK CO.
135 Bluxome Street
San Francisco, Calif.

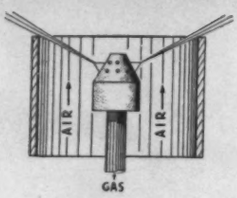
Eastern Representative:
J. H. McPHERSON
250 Stuart Street
Boston, Mass.

JOHN ZINK BUILDS A BURNER!

Chain Controlled from the Living Room

Or Fully Automatic with Customary Controls

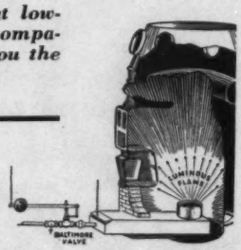
LOW PRICED FOR THE SMALL INCOME HOME



John Zink Burner showing "fool-proof" head with impinging jets, designed and constructed for long and thrifty service.

The Gas Industry has been waiting for a Burner like this—and John Zink has it! Cast-iron built—lasts a lifetime—burns either natural or artificial gas — equipped with Baltimore Automatic Cut-off and a John Zink limiting orifice—chain controlled from the living room for economy or fully automatic with customary controls—priced so low that anyone can buy it! Sell it at cost, at a small profit, or install it as you do your meters—and BUILD LOAD!

This John Zink Burner will open the great low-income market to Gas Heat. Many gas companies are already installing it. Let us send you the names of some of them!



The John Zink Burner—$21.00 packaged complete (Automatic equipment extra) —one size—fits any furnace—easily installed—service cost averages $1.50 per year less than usual!

JOHN ZINK BURNERS TULSA, OKLAHOMA

A LIFETIME BURNER IN A NEW LOW PRICE RANGE

PATENTED

This Accordion Packing Seals Sulphur, Acids and Alkalies

Accordion Packing rings can be built in all sizes, and made to meet all chemical conditions at any pressure and operating temperature.

They are particularly useful for sealing propane and butane, and other light oils containing sulphur, acids, or alkalies.

Accordion Packing Rings will effectively seal for long periods of time at very low friction. For additional information write for Technical Bulletin No. 390.

The TEXACONE Co.

2007-9 West Commerce P. O. Box 4186
Dallas, Texas

FRASER

Radiant Front Console

Equipped with Fan

Velgrain Finish

The heater that smiles while it warms

Manufactured by

Fraser Furnace Company

Stockton, California

Distributed by

H. R. Basford Company

San Francisco Los Angeles

cool slowly, they have a deposit of scale on the inside which acts as an insulator and reduces the rate of heat transference.

VIII. Repair and replacement of mechanical parts (P. 67):

Where parts are found broken or worn so badly that they need replacement, advise customer to have this done by plumber or company who installed heater. If the heater is found in dangerous condition due to faulty parts, turn off heater and advise customer to leave turned off until repairs have been made. In case of any doubt, regarding the safe condition of the heater, notify your supervisor.

LESSON FIVE

I. General review.
II. Examination.
III. Discussion of examination questions.

E. D. Wacker Made Gen. Sales Mgr. of C. J. Tagliabue Mfg. Co.

The C. J. Tagliabue Mfg. Co., Brooklyn, N. Y., announces the appointment of E. D. Wacker, as assistant general sales manager. The company manufactures temperature, pressure, flow, humidity, time and level instruments.

Mr. Wacker has been with the company for 11 years, part of the time as manager of the Pittsburgh territory and more recently as division sales manager in charge of Snapon controller sales for domestic refrigerators. A considerable portion of Mr. Wacker's time will be spent in the field contacting sales representatives as well as jobbers.

R. A. Skinner has been placed in charge of Snapon Controller sales, succeeding Mr. Wacker.

Texas Gas Utilities Co. Changes Uvalde District Personnel

L. B. Duke, formerly chief clerk of the Texas Gas Utilities Co.'s Del Rio office, has been named manager of the company's Uvalde district, to succeed the late J. C. Storey, according to H. L. Mann, receiver for Texas Gas Utilities Co. Mr. Duke has been connected with the company since its formation in 1930.

Paul Prickett, service man for the Uvalde district, has been made assistant manager and will be in charge of new business promotion and merchandise sales at Uvalde. C. J. Stillwell, customer's bookkeeper in the Del Rio general office, is succeeding Mr. Duke as chief clerk.

Wis. Public Service Corp. Consolidates Promotional Departments

J. P. Pulliam, president, Wisconsin Public Service Corp., has announced the consolidation of the advertising, publicity and educational departments of the company, effective May 1, 1935. The new department will be known as the department of research and will be located at Green Bay, Wis.

Messrs. O. C. Roehl, Dale Remington and F. J. Hatch will have charge of the various activities of the department, which will operate under the direction of C. R. Phenicie, vice-president, Green Bay, and C. B. Boulet, Milwaukee.

"MODERNIZE as you repair"

THE SPRAGUE METER COMPANY

BRIDGEPORT, CONN.

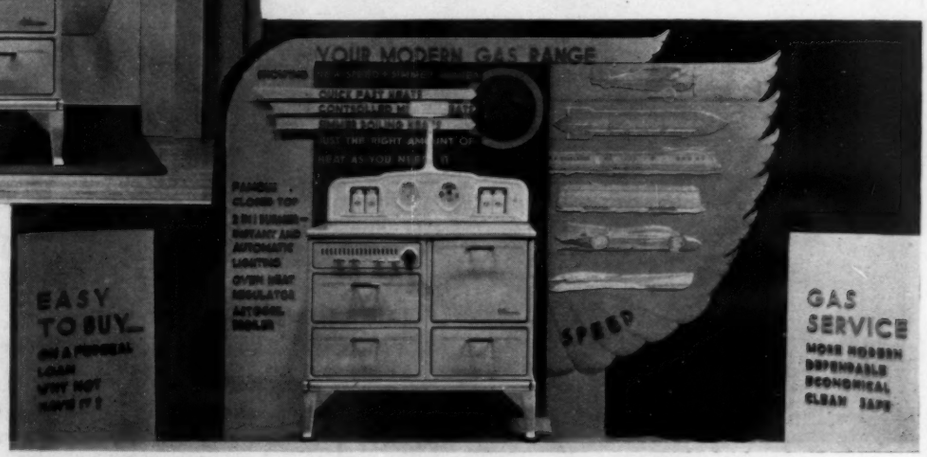
Los Angeles, Calif.
Davenport, Iowa.

San Francisco, Calif.
Houston, Texas.

WEDGEWOOD

extends greetings to the Northwest Conference Pacific Coast Gas Association being held in Tacoma, Washington.

Well displayed gas appliances win public acceptance and are an important factor toward increased sales. Here are two splendid examples of window displays. At left is a Wedgewood exhibit by the Portland Gas & Coke Company and below a window arranged by the Seattle Gas Co.

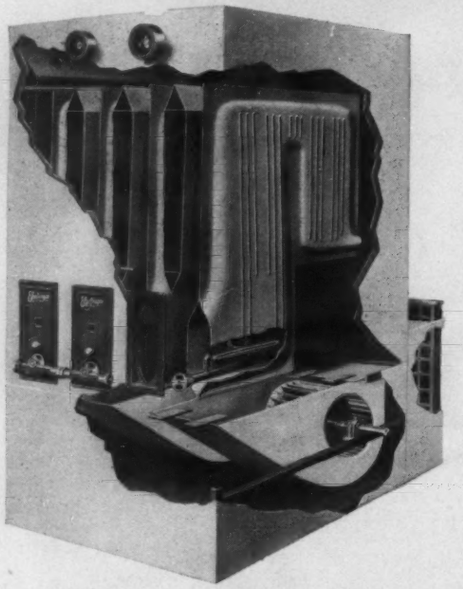


BEAUTY
CONVENIENCE
PERFORMANCE
STURDINESS
REASONABLY PRICED

•

James Graham Manufacturing Co.
San Francisco • Newark
Los Angeles, Calif. • Portland, Oregon

AIR CONDITIONING
Electrogas
HEATING EQUIPMENT



The same superior engineering principles that have made the Electrogas Floor Furnace famous now applied to the most efficient air-conditioning furnace on the market!

44 AGA Approved Models
Furnaces—Blowers
Filters—Washers

Write for Attractive Dealer Proposition

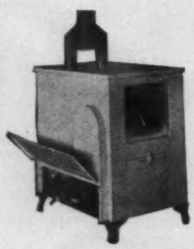
ELECTROGAS FURNACE & MANUFACTURING CO.
2575 Bayshore Boulevard, San Francisco

RECONDITIONING

Illustration above shows a recent reconditioning job where the NO-OX-ID MASTER COAT was used. NO-OX-ID was first employed in reconditioning work eleven years ago. That pipe, seven years old at the time and badly pitted, is still in service without a leak. NO-OX-ID lends itself to every reconditioning problem.

DEARBORN CHEMICAL COMPANY
LOS ANGELES
807 Mateo Street, Phone TRinity 3385
SAN FRANCISCO
421 Bryant St. Phone SUtter 8688

MODERN
EFFICIENT



Safe
Quick
Positive!

Pacific Forced Air Unit Heater *Illustrated*

PACIFIC'S *Complete* LINE of Gas Appliances Include:

- Floor Furnaces • Cabinet Heaters
- Wall Heaters • Gas Steam Radiators
- Radiant Heaters • Water Heaters
- Gravity Furnaces • Forced Air Furnaces • Unit Heaters

Write for complete information on any or all items

Pacific Gas Radiator Co.
Main Office and Factory
Huntington Park, California
Oldest and Largest Manufacturer of Gas Heating Appliances in the West

Group Organization for Employee Sales

(Continued from Page 13)

is selected for a special offer to purchasers, and extra inducements are made to employees for pushing it.

For each monthly campaign and special offer the company's sales planning department writes a special plan. Timely bulletins are issued while each activity is in progress.

Weekly reports on completed sales are compiled by the employee sales division, and these are set up by groups and by departments. But as noted before, each department is given only the group and department totals for its own sales, which eliminates inter-department competition with the possibilities for friction. Each group and department, however, is enabled to compare its current accomplishments with those of previous periods.

The main purpose of these weekly reports is to inform group leaders of the standing of their groups and stimulate inter-group rivalry.

BONUSES AND COMMISSIONS

Within certain limits, non-sales employees in New Orleans either may close actual sales, or, if they prefer, may merely turn in prospect leads. On industrial and commercial equipment, they do not complete sales, but are allowed to turn in leads, being paid a 5 per cent bonus based on the earned annual revenue value of the load added. The maximum bonus for any one lead is $10, and no bonus is paid on leads involving customers regularly contacted by the Industrial and Commercial Sales Division representatives.

Commissions of 8 per cent of retail sales price are paid employees on domestic appliances where they close the sales. Where only leads are turned in instead of sales being closed, the commissions are limited to 5 per cent.

An "override" is paid the group sales leaders, 25 per cent of the employee commission—this being in addition to the employee commission.

On certain appliances which require the knowledge of a trained salesman, the employee receives a load-building bonus instead of the commission based on retail sales price, and is only allowed to turn in sales leads for such appliances. In the case of automatic gas-fired water-heaters, for instance, this bonus amounts to $3 on every lead which results in a sale. On tank water heaters, the bonus is $1.50. Sales leaders get an "override" of 10 per cent on such bonuses, this also being in addition to the amount paid the employee.

Employee selling, so far as gas load is concerned, is being applied to water heaters, ranges, laundry stoves, circulating heaters, space heaters, and a number of other appliances.

While new features of the New Orleans program are being developed as the activity progresses, results to date are sufficiently promising to convince the company's sales executives that the general structure of the plan is a sound one.

DIRECTORY

Byllesby Engineering and Management Corporation

Wholly-owned subsidiary of Standard Gas and Electric Company

231 South La Salle Street, Chicago
New York Pittsburgh San Francisco

• HYDRAUGER •

MODERN HORIZONTAL BORING MACHINE

For Underground Installation of Pipe and Conduits. Avoids damage to costly pavements and saves time. Send for Bulletin.

HYDRAUGER CORPORATION, Ltd.

116 New Montgomery St. • San Francisco, California

SUBSCRIPTION ORDER BLANK

WESTERN GAS

810 So. Spring St.,
Los Angeles, Calif.

Gentlemen: Starting with the next monthly issue, you may send WESTERN GAS to the undersigned. Upon receipt of your invoice, remittance will be sent to cover (1 year $2.00) or (2 years $3.00). Other than U. S. $3.00 per year.

Name .....

Title .....

Company .....

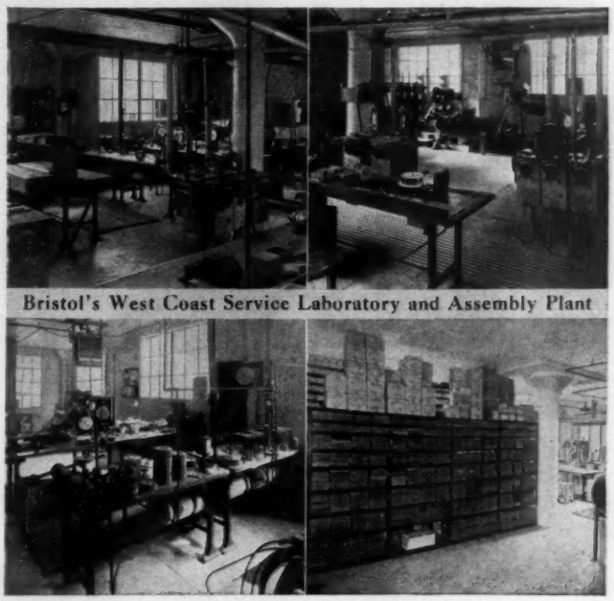
Address .....

City and State .....

Date .....

★

RECONDITION *your* Old Recorders Now



Bristol's West Coast Service Laboratory and Assembly Plant

DON'T WAIT, as one company did, until the recording pens of your faithful old Bristol's Recorders are worn down to a blunt edge by long years of service. Recondition them now. Give them new life to serve you for many years to come.

If your processing today is carried out at temperatures or pressures different from the ranges for which your Bristol's were originally installed, re-standardization is recommended.

The fee for this service is so modest that it will appeal to you. Just pack recorders carefully and ship to 311 Minna St., San Francisco. Send order to nearest branch office.

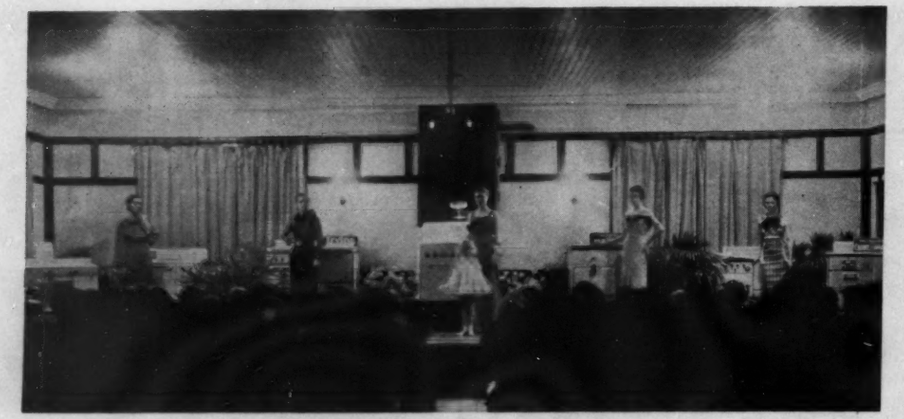
THE BRISTOL COMPANY

Branch Offices: Rialto Bldg., San Francisco . . 747 Warehouse Street, Los Angeles . . Branch Factory: 311 Minna Street, San Francisco

BRISTOL'S

TRADE MARK REG. U. S. PAT. OFF.

PIONEERS IN PROCESS CONTROL SINCE 1889



Stage Setting for Style Show Held by Peoples Gas Co.

Style Show and Range Demonstration at Port Arthur

A TYPE of institutional advertising which proved valuable to the Peoples Gas Co. of Port Arthur, Texas, in building community good will, and which was particularly gratifying to the local gas range dealers, took the form of a modern gas range display and style show. Conducted early this summer, as an evening performance, free to the public, the exhibition was part of a coordinated sales program which the Peoples Gas Co. is promoting for local gas appliance dealers under the direction of W. A. McIntyre, manager of the utility.

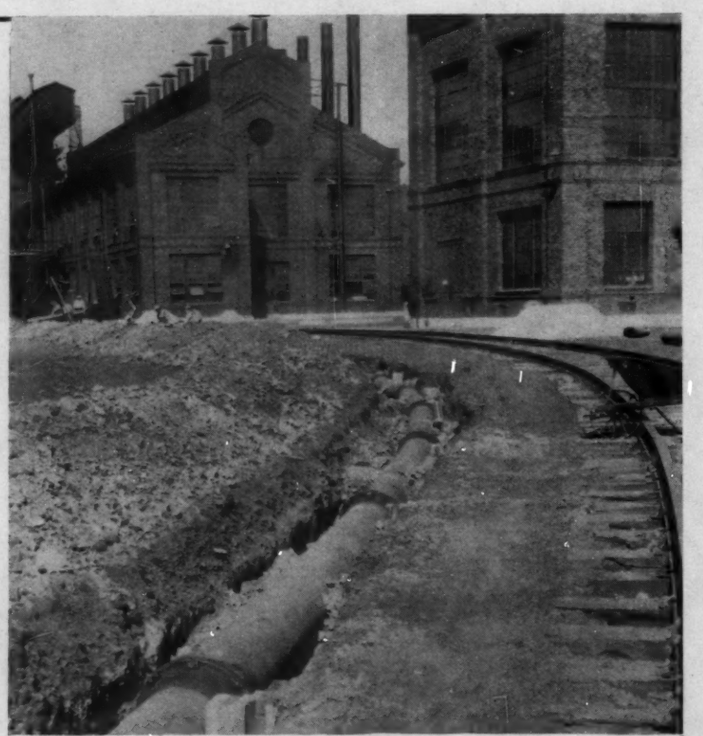
The program was arranged in the form of a skit glorifying "Mrs. Moderne"—the 1935 housewife who makes intelligent use of the modern gas range to free her hours of needless drudgery. With the aid of several models "Mrs. Moderne" was shown in costumes suitable to the various activities of her day, while the text of the skit closely tied the services of the modern automatic gas range into the action.

The unique program introduced Mrs. Moderne during the breakfast hour, when gaily-colored morning dresses were modeled. As she made ready for her morning jaunt the models featured sports dresses; afternoon dresses were shown as she departed for an afternoon of bridge, having prepared the evening's dinner and placed it in the care of her clock-controlled range which had been set to act in her absence; as evening gowns were featured, Mrs. Moderne was shown concluding her day as a gracious hostess and serene companion for the evening's entertainment.

Special advertising was run in the local paper, tying in all range dealers with the demonstration and style show and inviting the public to the performance. The Peoples Gas Co. took advantage of the opportunity afforded by the entertainment to award prizes to winners of a letterwriting contest which the company had promoted on the subject of why gas is the most desirable fuel available.

Nearly 1,000 entries were received in this contest. The winning letter featured five points of superiority of gas, which were chosen as a slogan and incorporated in an insignia for the company.

• ACIPCO •



Mono-Cast Doublex Simplex Centrifugal Pipe being installed for high-pressure gas transmission in Illinois. Photo shows line installed in cinder fill and adjacent to railroad tracks—proof that this pipe is proof against corrosion and vibration. For literature write American Cast Iron Pipe Co., Birmingham, Ala.

New Gas Cleaner Developed By Fluor Corp., Ltd.

A new type of gas cleaner or scrubber has recently been developed by the Fluor Corp. of Los Angeles. The cleaner is available in two types and several sizes, predetermined by the volume of gas to be handled. The only service required is the removal of water or dust which settles in the lower compartment.

An outstanding feature of the new product is its simple construction, having no complicated operating mechanism or movable parts to wear and be replaced. The cleaners can be furnished with different types of interior metal cones and screens, depending upon the characteristics of the gas being cleaned.

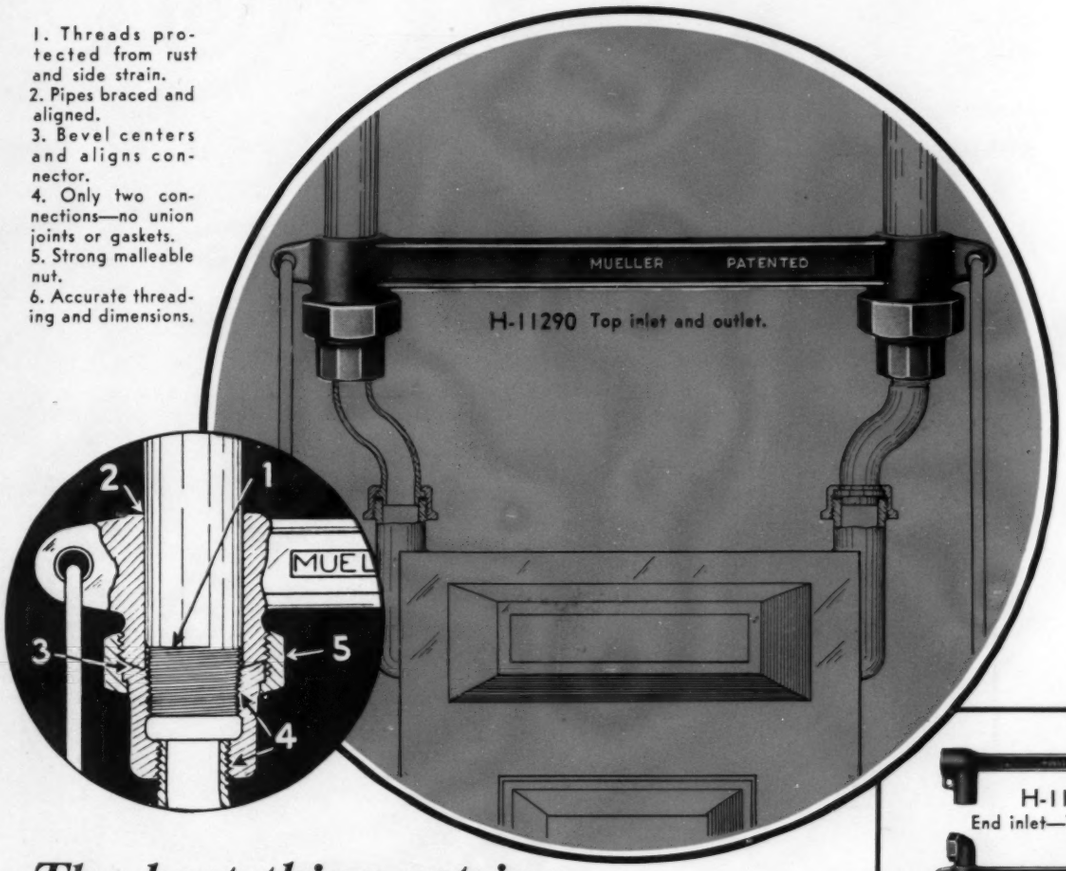
One of the outstanding features of the Fluor Cleaners is the fact that the pressure drop in both the moisture and dust remover is small.

A new circular describing the action of both the moisture remover and the dirt remover, has just been prepared. Copies will be mailed to anyone writing the Fluor Corporation, 909 East 59th St., Los Angeles, Calif.

Water Heater Sales Card Gets Prospects in Omaha

Metropolitan Utilities District, Omaha, Neb., made effective use of a unique sales help in conducting a recent water heater compaign. A small card approximately 10 by 5 inches, which can be slipped onto the water or gas pipe connection in the basement was placed in every home not provided with automatic water service by Metropolitan meter readers. This card informed the housewife that she could save steps by replacing the present water heater with an automatic water heater for only $1.80 per month. Sales Manager Landers reports the idea has resulted in many sales which otherwise would never have been made.

1. Threads protected from rust and side strain.
2. Pipes braced and aligned.
3. Bevel centers and aligns connector.
4. Only two connections—no union joints or gaskets.
5. Strong malleable nut.
6. Accurate threading and dimensions.



The best thing yet in

METER CONNECTIONS

THE many widely recognized advantages of Mueller Rigid Bar Meter Connections are found in their highest development in the bevel connector type of meter bar illustrated here.

The bevel connector of this new type Mueller Connection is a special reducing coupling which connects supply and outlet pipes to swivels, definitely spaces them, and permanently locates the meter end of the swivels so that no strain is transmitted to the meter tubes.

Note the construction of the bevel connector. The long, close fitting socket in the bar forces supply and outlet pipes into axial alignment for attachment of the bevel connectors. A sturdy malleable nut pulls the bevelled face of the connector into solid contact with a matching bevel on the bar. There are only two threaded connections as shown in the illustration—and *no union gaskets.*

Meter connections of this type are made in a range of patterns as illustrated opposite which meet all piping conditions. The complete line of Mueller Meter Swivels round out the line of Mueller equipment that saves time and dollars in all types of meter installations.

Ask for complete details or refer to pages 95 to 107 of your Mueller Gas Catalog H.

H-11280
End inlet—Top outlet.

H-11285
Elbow inlet—Top outlet.

H-11287
U-type inlet—Top outlet.

H-11295
End inlet with lock-wing stop—Top outlet.

H-11300
Top inlet with lock-wing stop—Top outlet.

H-11160 H-11162 H-11164

Mueller Meter Swivels are made in both malleable iron and brass. The offsets are evenly curved assuring full pipe opening from end to end. Shoulders and threaded ends are in accurate alignment. Typical malleable swivels are shown above.

MUELLER CO., Decatur, Illinois

Factories: Decatur, Ill.; Chattanooga, Tenn.; Los Angeles, Calif.; Sarnia, Ont.

Branches: New York and San Francisco

MUELLER

GAS DISTRIBUTION EQUIPMENT

Library of Congress, C
Att: Periodical Division,

You'll find *everything* in

REPUBLIC

ELECTRIC WELD

CASING • TUBING

Full-length couplings with clean, sharp threads
Perfectly round
Uniform wall thickness
Weld as strong as the wall
Free from scale, inside and out
High yield point, high ductility steel
REPUBLIC

Republic Steel
CORPORATION
GENERAL OFFICES · YOUNGSTOWN, OHIO